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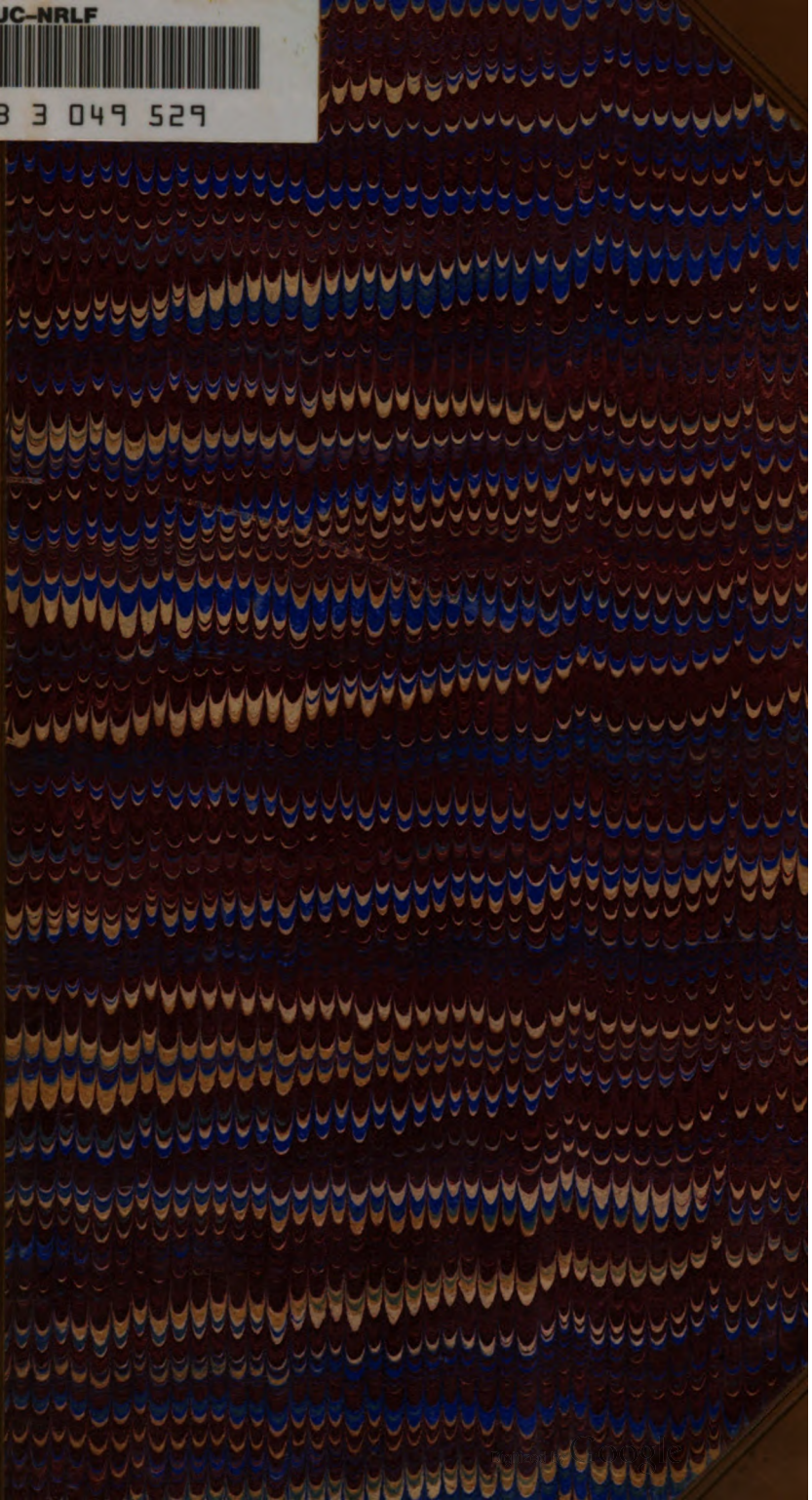
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DEVON & EXETER CLUB.

REPORT AND TRANSACTIONS
OF THE
DEVONSHIRE ASSOCIATION

FOR
THE ADVANCEMENT OF SCIENCE, LITERATURE,
AND ART.

[PAIGNTON, JULY, 1878.]

VOL. X.

PLYMOUTH:
W. BRENDON & SON, 26, GEORGE STREET.

1878.

The Editor is requested by the Council to make it known to the Public, that the Authors alone are responsible for the facts and opinions contained in their respective papers.

It is hoped that Members will be so good as to send to the Editor, the Rev. W. HARPLEY, Clayhanger Rectory, Tiverton, not later than 16th January, 1879, a list of any *errata* they may have detected in the present volume.

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1878-79.

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Hon. Local Secretary.

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WORTHY, C., JUN.

TABLE SHOWING THE PLACES AND TIMES OF MEETING OF THE DEVONSHIRE ASSOCIATION,
With the Officers, Number of Members, and Number of Papers read, from its commencement.

PLACES, TIMES, &c.	PRESIDENTS.	VICE-PRESIDENTS.	TREASURERS.*	SECRETARIES.*
EXETER— August 14th, 15th, 1862. 69 Members 5 Papers	Sir John Bowring, LL.D., F.R.S.	The Mayor of Exeter (W. Kendall, Esq.) Sir L. Falk, Bart., M.P. A. H. A. Hamilton, Esq. T. Shapter, Esq., M.D.	W. Vicary, Esq., F.G.S.	C. Spence Bate, Esq., F.R.S. Rev. W. Harpley, M.A. H. S. Ellis, Esq., F.R.A.S.
PLYMOUTH— July 29th, 30th, 1863. 80 Members 10 Papers	C. Spence Bate, Esq., F.R.S., F.L.S.	Sir John Bowring, LL.D., F.R.S. The Mayor of Plymouth (W. Derry, Esq.) Sir W. Snow Harris, F.R.S. J. L. Colley, Esq.	W. Vicary, Esq., F.G.S. J. Dabb, Esq.	Rev. W. Harpley, M.A. H. S. Ellis, Esq., F.R.A.S. J. B. Rowe, Esq., F.L.S.
TORQUAY— July 20th, 21st, 1864. 92 Members 15 Papers	E. Vivian, Esq., M.A.	C. Spence Bate, Esq., F.R.S., F.L.S. Chairman Torquay Local Board of Health (A. B. Sheppard, Esq.) Rev. R. H. Barnes, M.A. W. Pengelly, Esq., F.R.S., F.G.S.	W. Vicary, Esq., F.G.S.	Rev. W. Harpley, M.A. H. S. Ellis, Esq., F.R.A.S. E. Appleton, Esq.
TIVERTON— June 28th, 29th, 1865. 99 Members 14 Papers	C. G. B. Daubeney, M.D., LL.D., F.R.S., Professor of Botany, Oxford.	E. Vivian, Esq., M.A. The Mayor of Tiverton (W. N. Row, Esq.) C. A. W. Troyte, Esq.	E. Vivian, Esq., M.A. J. G. Dickenson, Esq.	Rev. W. Harpley, M.A. H. S. Ellis, Esq., F.R.A.S. Rev. J. B. Hughes, M.A.
TAVISTOCK— August 8th, 9th, 1866. 132 Members 18 Papers	The Earl Russell, K.G., K.G.C., F.R.S., &c.	C. G. B. Daubeney, M.D., LL.D., F.R.S., &c. His Highness Rajah Brooke Sir J. Trelawny, Bart. J. Carpenter-Garnier, Esq. A. Russell, Esq., M.P. J. D. A. Samuda, Esq., M.P.	E. Vivian, Esq., M.A. E. Straker, Esq.	Rev. W. Harpley, M.A. H. S. Ellis, Esq., F.R.A.S. Rev. D. Griffith.
BARNSTAPLE— July 23rd to 25th, 1867. 145 Members 26 Papers	W. Pengelly, Esq., F.R.S., F.G.S.	The Earl Russell, K.G., K.G.C., F.R.S. The Mayor of Barnstaple (R. Farleigh, Esq.) The Earl Fortescue J. R. Chanter, Esq. J. Jerwood, Esq., M.A., F.G.S.	E. Vivian, Esq., M.A. T. W. M. W. Guppy, Esq.	Rev. W. Harpley, M.A. H. S. Ellis, Esq., F.R.A.S. R. W. Cotton, Esq.

HONTON— July 28th to 30th, 1868. 178 Members 23 Papers	J. D. Coleridge, Esq., q.c., M.A., M.P.	W. Pengelly, Esq., F.R.S., F.G.S. The Mayor of Hontion (D. Gould, Esq.) Right Hon. Sir J. T. Coleridge Sir J. Kennaway, Bart. W. B. Bayley, Esq. A. B. Cochrane, Esq., M.P. J. Goldamid, Esq., M.P. C. Gordon, Esq. G. Neumann, Esq. Rev. Preb. Mackarness, M.A. W. Porter, Esq.	E. Vivian, Esq., M.A. E. Wesley, Esq.	Rev. W. Harpley, M.A. Rev. R. Kiruan, M.A. Rev. H. K. Penn, M.A.
DAETMOUTH— July 20th to 22nd, 1869. 246 Members 23 Papers	G. P. Bidder, Esq., q.c.	Sir J. D. Coleridge, q.c., M.A., M.P. Sir H. P. Seale, Bart. W. Froude, Esq., M.A. C. S. Hayne, Esq. G. F. Luttrell, Esq. A. Ridgway, Esq. Rev. J. Tracey, M.A.	E. Vivian, Esq., M.A. F. Ash, Esq.	Rev. W. Harpley, M.A. P. Hockin, Esq.
DEVONPORT— July 20th to 22nd, 1870. 276 Members 22 Papers	J. A. Froude, Esq., M.A.	G. P. Bidder, Esq., c.b. The Mayor of Deronport (J. Rolston, Esq., M.D.) Vice-Adml. the Hon. J. R. Drummond, c.b. Rear-Admiral Stewart, c.b. G. Dansey, M.D. J. D. Lewis, Esq., M.P. J. May, Esq. A. Moore, Esq. I. C. Radford, Esq. J. W. W. Ryder, Esq. E. St. Aubyn, Esq. P. W. Swain, Esq. T. Woolcombe, Esq.	E. Vivian, Esq., M.A. Rev. E. Roberts, M.A.	Rev. W. Harpley, M.A. G. T. Rolston, Esq.

* Italics indicate Local officers.

TABLE SHOWING THE PLACES AND TIMES OF MEETING, ETC.—Continued.

PLACES, TIMES, &c.	PRESIDENTS.	VICE-PRESIDENTS.	TREASURERS.*	SECRETARIES.*
BIDEFORD— Aug. 15th to 17th, 1871. 283 Members 28 Papers	Rev. Canon C. Kingsley, M.A., F.L.S., F.G.S.	J. A. Froude, Esq., M.A. The Mayor of Bideford (J. How, Esq.) Rev. F. L. Bazeley J. R. Pine Coffin, Esq. Captain E. P. Charlewood, R.N. W. A. Deane, Esq. Rev. I. H. Gosset, M.A. General Sir E. Green Captain Molesworth, R.N. E. U. Vidal, Esq. N. Whitley, Esq. Captain Willett A. B. Wren, Esq.	E. Vivian, Esq., M.A. <i>R. Simphins, Esq.</i>	Rev. W. Harpley, M.A. <i>J. A. Parry, Esq.</i>
EXETER— July 30 to Aug. 1, 1872. 294 Members 33 Papers	The Right Rev. Lord Bishop of Exeter	Rev. Canon C. Kingsley, M.A., F.L.S., F.G.S. The Mayor of Exeter (J. Harding, Esq.) The Sheriff (Horace G. Lloyd, Esq.) Sir L. Palk, Bart, M.P. Sir John Bowring, LL.D., F.R.S. Sir J. D. Coleridge, Q.C., M.A., M.P. E. A. Bowring, Esq., M.P. Rev. Presentor Cook, M.A. H. S. Ellis, Esq., F.R.A.S. Rev. Treasurer Hawker, M.A. J. Kennaway, Esq., M.P. E. Parfitt, Esq.	E. Vivian, Esq., M.A. <i>W. Cotton, Esq.</i>	Rev. W. Harpley, M.A. <i>Rev. R. Kirwan, M.A., F.S.A.</i> <i>G. W. Ormerod, Esq., M.A.,</i> F.G.S. <i>E. Parfitt, Esq.</i>

SIDMOUTH— July 22nd to 24th, 1873. 330 Members 26 Papers	The Right Hon. S. Cave, M.A., M.P.	The Right Rev. Lord Bishop of Exeter The Right Hon. and Rev. The Earl of Buckinghamshire The Hon. and Rev. the Lord Sidney Godolphin Osborne Sir J. Floyd, Bart. Sir J. H. Kennaway, Bart., M.P. Rev. H. G. J. Clements, M.A. W. R. Coleridge, Esq. C. J. Cornish, Esq. P. O. Hutchinson, Esq. J. Ingleby Mackenzie, Esq., M.B. W. Radford, M.D. R. N. Thornton, Esq.	E. Vivian, Esq., M.A. <i>Captain Ross, B.N.</i>	Rev. W. Harpley, M.A. <i>J. Ingleby Mackenzie, Esq.,</i> M.B.
TRIGNMOUTH— July 28th to 30th, 1874. 327 Members 33 Papers	The Right Hon. the Earl of Devon	The Right Hon. S. Cave, M.A., M.P. J. G. Beavan, Esq. The Right Hon. Lord Clifford R. M. Dunn, Esq. E. Gulsan, Esq. Rev. Treasurer Hawker, M.A. Rev. W. Laidley, M.A. W. C. Lake, Esq., M.D. J. A. Magrath, Esq., M.D. G. W. Ormerod, Esq., M.A., F.G.S. J. Parson, Esq. T. V. Wollaston, Esq., M.A., F.L.L. H. B. T. Wrey, Esq.	E. Vivian, Esq., M.A. <i>J. Whidborne, Esq.</i>	Rev. W. Harpley, M.A. <i>G. W. Ormerod, Esq., M.A.,</i> F.G.S.

* Italics indicate Local officers.

TABLE SHOWING THE PLACES AND TIMES OF MEETING, ETC.—Continued.

PLACES, TIMES, &c.	PRESIDENTS.	VICE-PRESIDENTS.	TREASURERS.*	SECRETARIES.*
TORRINGTON— July 27th to 29th, 1876. 366 Members 29 Papers	R. J. King, Esq., M.A.	The Right Hon. The Earl of Devon The Mayor of Torrington (T. Jackson, Esq.) Rev. S. Buckland, M.A. W. Cann, Esq. The Right Hon. Lord Clinton Rev. F. T. Colby, B.D., F.S.A. W. A. Deane, Esq. W. H. Gamlen, Esq. H. S. Gill, Esq. J. G. Johnson, Esq., M.P. W. H. Haliday, Esq., M.A. Dr. A. Kingdon Rev. C. E. Palmer, M.A. W. E. Price, Esq. Hon. Mark Rolle J. C. Moore-Stevens, Esq. R. L. Tapley, Esq.	E. Vivian, Esq., M.A. M. E. Loveband, Esq.	Rev. W. Harpley, M.A. Geo. Dox, Esq.
ASHBURTON— July 25th to 27th, 1876. 400 Members 33 Papers	Rev. Treasurer Hawker, M.A.	R. J. King, Esq., M.A. The Portreeve of Ashburton (P. F. S. Amery, Esq.) Baldwin J. P. Bastard, Esq. A. Champemowne, Esq., M.A., F.G.S. R. Dymond, Esq., F.S.A. F. H. Firth, Esq. C. J. Follett, Esq. Rev. P. Jackson, M.A. R. Jardine, Esq. J. B. Paige-Browne, Esq., M.A. J. Robinson, Esq. Rev. W. H. Thornton, B.A. J. Tozer, Esq. R. Tucker, Esq. J. Woodley, Esq. Rev. C. Worthy, M.A.	E. Vivian, Esq., M.A. W. S. Gervis, Esq., M.D., F.G.S.	Rev. W. Harpley, M.A. J. S. Amery, Esq.

* Italics indicate Local officers.

KINGSBRIDGE—
July 31st to Aug. 2nd,
1877.
604 Members
33 Papers

Ven. Archdeacon Earle, M.A.

Rev. Treasurer Hawker, M.A.
G. P. Bidder, Esq., C.B.
L. B. Bowring, Esq., C.S.I.
W. Cubitt, Esq.
F. S. Cornish, Esq.
J. Elliot, Esq.
Rev. A. N. Hingston, M.A.
Robert Hurrell, Esq.
Rev. P. A. Ilbert, M.A.
Rev. W. D. Pittman, M.A.
Rev. John Power, M.A.
Rev. J. Sloane-Evans, M.A.

E. Vivian, Esq., M.A.
B. Balkwill, Esq.
Rev. W. Harpley, M.A.
J. S. Hurrell, Esq.

PAIGINTON—
July 30th to Aug. 1st,
1878.
471 Members
34 Papers

Sir Samuel White Baker,
M.A., F.R.S., F.R.G.S.

Ven. Archdeacon Earle, M.A.
J. H. Batten, Esq., F.R.G.S.
R. S. S. Carey, Esq., J.P.
A. H. Dendy, Esq., M.A.
J. T. Goodridge, Esq., M.R.C.S.
Rev. Preb. Hall, M.A.
R. Mallock, Esq.
C. H. Pridham, Esq., F.R.C.S.
F. H. Spragge, Esq., J.P.
Rev. T. R. R. Stebbing, M.A.
Captain Synge, R.N.
F. H. Trevithick, Esq.

E. Vivian, Esq., M.A.
A. Gregory, Esq.

Rev. W. Harpley, M.A.
W. Edward Tucker, Esq.

* Italics indicate Local officers.

RULES.

1. THE Association shall be styled the Devonshire Association for the Advancement of Science, Literature, and Art.

2. The objects of the Association are—To give a stronger impulse and a more systematic direction to scientific enquiry in Devonshire; and to promote the intercourse of those who cultivate Science, Literature, or Art, in different parts of the county.

3. The Association shall consist of Members, Honorary Members, and Corresponding Members.

4. Every candidate for membership, on being nominated by a member to whom he is personally known, shall be admitted by the General Secretary, subject to the confirmation of the General Meeting of the Members.

5. Persons of eminence in Literature, Science, or Art, connected with the West of England, but not resident in Devonshire, may, at a General Meeting of the Members, be elected Honorary Members of the Association; and persons not resident in the county, who feel an interest in the Association, may be elected Corresponding Members.

6. Every *Member* shall pay an Annual Contribution of Half-a-guinea, or a Life Composition of Five Guineas.

7. Ladies only shall be admitted as Associates to an Annual Meeting, and shall pay the sum of Five Shillings each.

8. Every *Member* shall be entitled gratuitously to a lady's ticket.

9. The Association shall meet annually, at such a time in July and at such place as shall be decided on at the previous Annual Meeting.

10. A President, two or more Vice-Presidents, a General Treasurer, and one or more General Secretaries, shall be elected at each Annual Meeting.

11. The President shall not be eligible for re-election.

12. Each Annual Meeting shall appoint a local Treasurer and Secretary, who, with power to add to their number any Members of the Association, shall be a local Committee to assist in making such local arrangements as may be desirable.

13. In the intervals of the Annual Meetings, the affairs of the Association shall be managed by a Council, which shall consist exclusively of the following Members of the Association, excepting Honorary Members, and Corresponding Members:

(a) Those who fill, or have filled, or are elected to fill, the offices of President, General and Local Treasurers, General and Local Secretaries, and Secretaries of Committees appointed by the Council.

(b) Authors of Papers which have been printed *in extenso* in the Transactions of the Association.

14. The Council shall hold a meeting at Exeter in the month of January or February in each year, on such day as the General Secretary shall appoint, for the due management of the affairs of the Association, and the performing the duties of their office.

15. The General Secretary, or any four members of the Council, may call extraordinary meetings of their body, to be held at Exeter, for any purpose requiring their present determination, by notice under his or their hand or hands, addressed to every other member of the Council, at least ten clear days previously, specifying the purpose for which such extraordinary meeting is convened. No matter not so specified, and not incident thereto, shall be determined at any extraordinary meeting.

16. The General Treasurer and Secretary shall enter on their respective offices at the meeting at which they are elected; but the President, Vice-Presidents, and Local Officers, not until the Annual Meeting next following.

17. With the exception of the Ex-Presidents only, every Councillor who has not attended any Meeting, or adjourned Meeting, of the Council during the period between the close of any Annual General Meeting of the Members and the close of the next but two such Annual General Meetings, shall have forfeited his place as a Councillor, but it shall be competent for him to recover it by a fresh qualification.

18. The Council shall have power to fill any Official vacancy which may occur in the intervals of the Annual Meetings.

19. The ~~Annual~~ Contributions shall be payable in advance, and shall be due in each year on the day of the Annual Meeting.

20. The Treasurer shall receive all sums of money due to the Association; he shall pay all accounts due by the Association after they shall have been examined and approved; and he shall report to each meeting of the Council the balance he has in hand, and the names of such members as shall be in arrear, with the sums due respectively by each.

21. Whenever a Member shall have been three months in arrear in the payment of his Annual Contributions, the Treasurer shall apply to him for the same.

22. Whenever, at an Annual Meeting, a Member shall be two years in arrear in the payment of his Annual Contributions, the Council may, at its discretion, erase his name from the list of members.

23. The General Secretary shall, at least one month before each Annual Meeting, inform each member by circular of the place and date of the Meeting.

24. Members who do not, on or before the day of the Annual Meeting, give notice, in writing or personally, to the General Secretary of their intention to withdraw from the Association, shall be regarded as members for the ensuing year.

25. The Association shall, within three months after each Annual Meeting, publish its Transactions, including the Rules, a Financial Statement, a List of the Members, the Report of the Council, the President's Address, and such papers, in abstract or *in extenso*, read at the Annual Meeting, as shall be decided by the Council.

26. The Association shall have the right at its discretion of printing *in extenso* in its Transactions all papers read at the Annual Meeting. The copyright of a paper read before any meeting of the Association, and the illustrations of the same which have been provided at his expense, shall remain the property of the Author; but he shall not be at liberty to print it, or allow it to be printed elsewhere, either *in extenso* or in abstract amounting to as much as one-half of the length of the paper, before the first of November next after the paper is read.

27. The Authors of papers printed in the Transactions shall, within seven days after the Transactions are published,

receive twenty-five private copies free of expense, and shall be allowed to have any further number printed at their own expense. All arrangements as to such extra copies to be made by the Authors with the printers to the Association.

28. If proofs of papers to be published in the Transactions be sent to Authors for correction, and are retained by them beyond four days for each sheet of proof, to be reckoned from the day marked thereon by the printers, but not including the time needful for transmission by post, such proofs shall be assumed to require no further correction.

29. Should the Author's corrections of the press in any paper published in the Transactions amount to a greater sum than in the proportion of twenty shillings per sheet, such excess shall be born by the Author himself, and not by the Association.

30. Every *Member* shall, within three months after each Annual Meeting, receive gratuitously a copy of the Transactions.

31. The Accounts of the Association shall be audited annually, by Auditors appointed at each Annual Meeting, but who shall not be *ex officio* Members of the Council.

BYE-LAWS AND STANDING ORDERS.

1. In the interests of the Association it is desirable that the President's Address in each year be printed previous to its delivery.

2. In the event of there being at an Annual Meeting more Papers than can be disposed of in one day, the reading of the residue shall be continued the day following.

3. The pagination of the Transactions shall be in Arabic numerals exclusively, and carried on consecutively, from the beginning to the end of each volume; and the Transactions of each year shall form a distinct and separate volume.

4. The General Secretary shall bring to each Annual Meeting of the Members a report of the number of copies in stock of each 'Part' of the Transactions, with the price per copy of each 'Part' specified; and such report shall be printed in the Transactions next after the Treasurer's financial statement.

5. The General Secretary shall prepare and bring to each Annual Meeting brief Obituary Notices of Members deceased during the previous year, and such notices shall be printed in the Transactions.

6. An amount not less than the sum of the Compositions of all existing Life-Members shall be kept at Interest in the names of the Treasurer and General Secretary.

7. The General Secretary shall, within one month of the close of each Annual Meeting of the Association, send to each Member newly elected at the said Meeting a copy of the following letter :—

*Devonshire Association for the Advancement of Science, Literature,
and Art.*

SIR,—I have the pleasure of informing you that on the of
July, you were elected a Member of the Association on the
nomination of

VOL. X.

The copy of the Transactions for the current year, which will be forwarded to you in due course, will contain the Laws of the Association. Meanwhile I beg to call your attention to the following statements :—

(1) Every Member pays an Annual Contribution of Half a Guinea, or a Life Composition of Five Guineas.

(2) The Annual Contributions are payable in advance, and are due in each year on the day of the Annual Meeting.

(3) Members who do not, on or before the day of the Annual Meeting, give notice in writing or personally to the General Secretary of their intention to withdraw from the Association are regarded as Members for the ensuing year.

The Treasurer's address is—EDWARD VIVIAN, Esq., Woodfield, Torquay.—I remain, Sir, your faithful Servant,

Hon. Sec.

8. The reading of any Paper shall not exceed twenty minutes, and in any discussion which may arise, no speaker shall be allowed to speak more than ten minutes.

9. Papers to be read to the Annual Meetings of the Association must strictly relate to Devonshire, and, as well as all Reports intended to be printed in the Transactions of the Association, and prepared by Committees appointed by the Council, must, together with all drawings intended to be used in illustrating them in the said Transactions, reach the General Secretary's residence not later than the 24th day of June in each year. The General Secretary shall, not later than the 7th of the following July, return to the authors all such Papers as he may decide to be unsuitable to be printed in the said Transactions, and shall send the residue, together with the said Reports of Committees, to the Association's printers, who shall return the same so that they may reach the General Secretary's residence not later than on the 14th day of the said July, together with a statement of the number of pages each of them would occupy if printed in the said Transactions, as well as an estimate of the extra cost of the printing of such Tables, of any kind, as may form part of any of the said Papers and Reports; and the General Secretary shall lay the whole, as well as an estimate of the probable number of Annual Members of the Association for the year commencing on that day, before the first Council Meeting on the first day of the next ensuing Annual Meeting, when the Council shall select not a greater number of the Papers thus laid before them than will, with the other documents to be printed in the said Transactions, make as many sheets of printed matter as can be paid for with 60 per cent. of the subscriptions, for the year, of the said probable

number of Annual Members, exclusive of the extra cost of the printing of such aforesaid Tables, which have been approved and accepted by the Council, provided the aggregate of the said extra cost do not exceed 6 per cent. of the said subscriptions; exclusive also of the printers' charge for corrections of the press; and also exclusive of the cost of printing an Index, a list of Errata, and such Resolutions passed at the next Winter meeting of the Council, as may be directed to be so printed by the said Winter Meeting.

10. Papers communicated by Members for Non-Members, and accepted by the Council, shall be placed in the Programme below those furnished by Members themselves.

11. Papers which have been accepted by the Council cannot be withdrawn without the consent of the Council.

12. The Council will do their best so to arrange Papers for reading as to suit the convenience of the authors; but the place of a Paper cannot be altered after the Programme has been settled by the Council.

13. Papers which have already been printed *in extenso* cannot be accepted, unless they form part of the literature of a question on which the Council has requested a Member or Committee to prepare a report.

14. Every meeting of the Council shall be convened by Circular, sent by the General Secretary to each Member of the Council, not less than ten days before the Meeting is held.

15. All Papers read to the Association which the Council shall decide to print *in extenso* in the Transactions, shall be sent to the printers, together with all drawings required in illustrating them, on the day next following the close of the Annual Meeting at which they were read.

16. All Papers read to the Association which the Council shall decide not to print *in extenso* in the Transactions, shall be returned to the authors not later than the day next following the close of the Annual Meeting at which they were read; and abstracts of such Papers to be printed in the Transactions shall not exceed one-fourth of the length of the Paper itself, and must be sent to the General Secretary on or before the seventh day after the close of the Annual Meeting.

17. The Author of every Paper which the Council at any Annual Meeting shall decide to print in the Transactions shall be expected to pay for all such illustrations as in his judgment the said Paper may require; but the Council may, at

their discretion, vote towards the expense of such illustrations any sum not exceeding the balance in hand as shown by the Treasurer's Report to the said Meeting, after deducting all Life Compositions, as well as all Annual Contributions received in advance of the year to which the said Report relates, which may be included in the said balance.

18. The printers shall do their utmost to print the Papers in the Transactions in the order in which they were read, and shall return every Manuscript to the author as soon as it is in type, *but not before*. They shall be returned *intact*, provided they are written on loose sheets and on one side of the paper only.

19. Excepting mere verbal alterations, no Paper which has been read to the Association shall be added to, without the written approval and consent of the General Secretary; and no additions shall be made except in the form of notes or postscripts, or both.

20. In the intervals of the Annual Meetings, all Meetings of the Council shall be held at Exeter, unless some other place shall have been decided on at the previous Council Meeting.

21. When the number of copies on hand of any 'Part' of the Transactions is reduced to twenty, the price per copy shall be increased 25 per cent.; and when the number has been reduced to ten copies, the price shall be increased 50 per cent. on the original price.

22. The Bye-Laws and Standing Orders shall be printed after the "Rules" in the Transactions.

23. All resolutions appointing committees for special service for the Association shall be printed in the Transactions next before the President's Address.

REPORT OF THE COUNCIL,

As presented to the General Meeting, Paignton, 1878.

THE Sixteenth Annual Meeting of the Association commenced on Tuesday, July 31st, at Kingsbridge. Nothing could be brighter or more brilliant than the weather; and driving into the picturesque little township, beneath a cloudless sky and the triumphal arches that spanned the main street, was an opening most propitious. The members of the Association were heartily welcomed to the town by Mr. R. Hurrell, at the Town Hall, at one o'clock; and the Rev. Treasurer Hawker, the outgoing President, on behalf of the Association, cordially reciprocated the good wishes expressed. Everything that could be done to ensure the success of the meeting had been done by the Local Reception Committee. The Museum, which contains some remarkably interesting objects, and the Reading Room, were thrown open to the Association; the local officers were indefatigable in their exertions; and the Local Secretary, Mr. J. S. Hurrell, succeeded in enlisting a larger number of members than had been added at any previous meeting.

The General Meeting of Members, at which there was an unusually large attendance, was held in the Town Hall, at four p.m., and the usual formal business transacted. In the evening, at eight p.m., the President for the year, the Venerable Archdeacon Earle, delivered his Address, the ex-President having introduced his successor to the Association, and vacated the presidential chair in his favour.

On Wednesday, the 1st August, the Association met at 11 a.m., and commenced the reading and discussion of the following programme of Papers:

Second Report of Committee on Devon-	} <i>Dr. Lake.</i>
shire Meteorology	
Second Report of Committee on Scientific	} <i>W. Pengelly, F.R.S., F.G.S.</i>
Memoranda	
Second Report of Committee on Devon-	} <i>R. J. King, M.A.</i>
shire Folk-lore	
First Report of Committee on Devonshire	} <i>Rev. Treasurer Hawker, M.A.</i>
Celebrities, with Mr. Worth's Catalogue	
First Report of Committee on Dartmoor .	<i>W. F. Collier.</i>

First Report of Committee on Devonshire	}	<i>F. H. Firth.</i>
Verbal Provincialisms		
Kingsbridge and Dodbrooke, an Historical Sketch	}	<i>R. Dymond, F.S.A.</i>
A Plea for the Picturesque in Devonshire Towns		
The Altar Piece of St. Andrew's Chapel, Plymouth	}	<i>Rev. J. E. Risk, M.A.</i>
Notes on the "Idol" discovered at Kingsteignton		
Notes on Boulders and Scratched Stones in South Devon	}	<i>W. Pengelly, F.R.S., F.G.S.</i>
Sketch of Bishop Prideaux		
White Ale	}	<i>P. Q. Karkeek.</i>
The Saxon Conquest of Devonshire		
A Chapter on the Budleigh Salterton Pebbles	}	<i>W. A. E. Usher, F.G.S.</i>
Encroachment of the Sea at Westward Ho!		
On the Attempted Introduction of the Culture of Silk into Devonshire in the Reign of James I.	}	<i>A. H. A. Hamilton, M.A.</i>
Fauna of Devon, Part XV. Reptiles		
William Brockedon: a Biographical Sketch	}	<i>E. Windeatt.</i>
Puritanism in Devonshire and the Exeter Assembly		
A Scheme for a History of Devonshire	}	<i>P. O. Hutchinson.</i>
On the Age and Origin of the Watcombe Clay		
Heraldic Discovery in Exeter Cathedral	}	<i>R. Dymond, F.S.A.</i>
Fauna of Devon, Part XVI. Mammalia		
Sketch of Wolcot (Peter Pindar)	}	<i>Rev. Treasurer Hawker, M.A.</i>
Sir Edmund Fortescue and the Siege of Fort Charles		
Notes on Slips connected with Devonshire	}	<i>W. Pengelly, F.R.S., F.G.S.</i>
The Cistercian Houses of Devon, Part IV. Newenham and Dunkeswell		
A Classification of the Triassic Rocks of Devon and West Somerset	}	<i>W. A. E. Usher, F.G.S.</i>
On some large <i>Aplysia</i> taken in Torbay in 1875		
The Justices of the Peace of the County of Devon and the Benevolences of 1614 and 1622	}	<i>A. H. A. Hamilton, M.A.</i>
The Styles and Titles of the Municipal Corporations of Devonshire		
Notes on Recent Notices of the Geology and Palæontology of Devonshire, Part IV.	}	<i>W. Pengelly, F.R.S., F.G.S.</i>

In the evening the Annual Dinner of the Association was held at the King's Arms, the President in the chair. The dinner was an excellent one, the company large, and the proceedings enjoyable. After dinner the party adjourned to the

lovely Vicarage lawn and gardens, and were entertained at tea by the Vicar, the Rev. N. Hingston, and Mrs. Hingston.

The reading of papers was resumed on Thursday morning at ten o'clock, and continued without interruption until the programme was concluded, about 4 p.m. The papers were varied in interest, and gave rise to some profitable discussions, pertinent remarks, and valuable suggestions. A General Meeting was then held, and hearty votes of thanks were passed to the inhabitants of Kingsbridge, the Local Committee, the local officers, and the President. The remainder of the afternoon and evening was devoted to a most pleasant trip, through delightful scenery, to Thurlestone Rock, calling on the way at Bowringsleigh, and inspecting the interior of that fine old mansion, kindly thrown open by Mr. W. Ilbert. On arriving at Thurlestone, the party were entertained at tea by the Vicar, the Rev. P. A. Ilbert, and Mrs. Ilbert; and on their return had an early supper provided in a large tent, erected on the lawn of West Alvington Vicarage, by the President and Mrs. Earle.

On Friday the proceedings of the Kingsbridge meeting were brought to a close, with an excursion in the *Reindeer* down the Kingsbridge river, and out by the ruins of Fort Charles and romantic Salcombe into the bay to South Sands and the Bolt Head. The weather was fine, and the trip delightful.

During the Meeting several minor excursions were arranged. A party of members—early risers—started one morning before breakfast and visited Leigh, a farmhouse in the parish of Churchstow, which tradition says belonged to the Abbey of Buckfast, and which was probably a grange belonging to the house. The buildings, although very much neglected, are of great interest. The entrance gateway, with the chamber over, is very picturesque; and the carefully-wrought stone of which it is constructed gives the whole a handsome appearance. It is unfortunate that a place of so much interest should be allowed to continue in its present state of dilapidation, which must ere long lead to its final decay, while now a comparatively small expenditure would secure for future generations a most characteristic structure. The place is worthy of a lengthened description, and of a much more careful investigation than the members were able to give during their short visit.

The Church of Churchstow, in which parish Kingsbridge was originally situated, was also visited. It contains no features of interest. Its architecture is for the most part

Perpendicular; but there are some slight remains of earlier work, more especially in the transept.

The old house called Well, or Langwell, in Dodbrooke, was probably visited by all the members. Unfortunately nothing new as to its history was discovered.

Mr. T. W. Weymouth was good enough to allow those visitors who were desirous of doing so to go over his very interesting house in the High Street, Kingsbridge, and the admirable specimens of panelling and other carved work afforded much pleasure. Mr. Weymouth also produced the ancient deeds relating to the building of the church at Kingsbridge, which are in his custody, as solicitor to the feoffees of the town lands. They are fully described in Hawkins's *Kingsbridge and Salcombe*. 1819.

Ornithologists were much pleased with the fine collection of local birds belonging to Mr. H. Nicholls. Coombe Royal and its gardens were of course visited; and the beautiful views of the estuary from the Knowle, the residence of R. Hurrell, Esq., formerly the home of the Devonshire Naturalist, Col. Montagu, were much appreciated by those who accepted the owner's kindly invitation to visit his house.

It having been decided that the next meeting should be held at Paignton, the following were elected officers for that occasion:

President: W. Froude, Esq., M.A., LL.D., F.R.S., &c. Vice-Presidents: J. H. Batten, Esq., F.R.G.S.; R. S. S. Cary, Esq., J.P.; A. H. Dendy, Esq., M.A.; Ven. Archdeacon Earle, M.A.; J. T. Goodridge, Esq., M.R.C.S.; Rev. Preb. Hall, M.A.; R. Mallock, Esq.; C. H. Pridham, Esq., F.R.C.S.; F. H. Spragge, Esq., J.P.; Rev. T. R. R. Stebbing, M.A.; Captain Synge, R.N.; F. H. Trevithick, Esq. Hon. Treasurer: E. Vivian, Esq., M.A., Torquay. Hon. Local Treasurer: A. Gregory, Esq. Hon. Secretary: Rev. W. Harpley, M.A., F.C.P.S., Clayhanger, Tiverton. Hon. Local Secretary: W. Edward Tucker, Esq.

The Council have published the President's Address, together with papers read before the Association; also the Treasurer's Report, a list of Members, Committees for special purposes, and the Rules, Standing Orders, and Bye-Laws.

Copies of the *Transactions* have been sent to each Member, and to the following societies: The Royal Society, Linnæan Society, Geological Society, Anthropological Institute of Great Britain and Ireland, Royal Institution (Albemarle Street), Devon and Exeter Institution (Exeter), Plymouth Institution, Torquay Natural History Society, Barnstaple Literary and Scientific Institution, Royal Institution (Cornwall), and the Library of the British Museum.

Treasurer's Report of Receipts and Expenditure during the Year ending 30th July, 1878.

RECEIPTS.		£	s.	d.	EXPENDITURE.		£	s.	d.
Balance in Treasurer's hand 27th July, 1878 . . .	22	11	7		Deposited at Interest in Torquay Bank . . .		90	0	0
Arrears of Annual Contributions for 1876-7 . . .	4	0	0		Brendon & Son for Printing "Transactions" (1877) . . .		131	2	6
Annual Contributions for 1877-8 . . .	194	0	6		Ditto ditto Index to Vol. viii. (1876) . . .		2	10	6
Prepaid Annual Contributions for 1878-9 21 10 6					Ditto ditto Cards Circulars, &c. . .		5	18	0
Ditto ditto 1879-80 0 10 0					Ditto ditto Postage and Carriage of Parcels . . .		15	7	0
Ladies' Tickets sold at Kingsbridge . . .	22	0	6		Ditto ditto Stationery . . .		0	10	6
Life Compositions . . .	1	10	0		Fox for Printing Programmes . . .		0	15	0
Sale of "Transactions," 3 copies for 1862 0 6 0					Torquay Directory Co. for Printing Circulars . . .		0	18	0
Ditto ditto 4 ditto 1863 0 8 0					Insurance . . .		0	5	0
Ditto ditto 1 ditto 1864 0 3 0					Hon. General Treasurer for Petty Expenses . . .		6	15	3
Ditto ditto 1 ditto 1866 0 3 0					Hon. General Secretary ditto . . .		6	1	4
Ditto ditto 1 ditto 1867 0 6 0					Advertising in 1877 . . .		3	11	6
Ditto ditto 1 ditto 1868 0 6 6					Balance in Treasurer's hand 27th July, 1878 . . .		37	4	9
Ditto ditto 1 ditto 1869 0 12 0									
Ditto ditto 1 ditto 1874 0 8 6									
Interest on Deposit to 30th June, 1878 . . .	2	13	0						
	4	4	3						
	£300	19	4				£300	19	4
Annual Contributions unpaid for 1876-7 . . .	2	10	0						
Ditto ditto 1877-8 . . .	16	0	0						
	£18	10	0						

(Signed) EDWARD VIVIAN, TREASURER.

Torquay, 27th July, 1878.

We have compared the Books and Vouchers presented to us, and found them correct,

(Signed) GEO. E. HEARDER,
(Signed) CALEB WEEKS, FOR E. APPLETON, } AUDITORS.

Torquay, 29th July, 1878.

STATEMENT OF THE PROPERTY OF THE ASSOCIATION,

July 30th, 1878.

			£	s.	d.
Deposit at Interest in Torquay Bank (Life Compositions of thirty-eight Members)	.	.	190	0	0
Balance in Treasurer's hand *	.	.	37	4	9
Arrears of Annual Contributions (valued at)	.	.	7	0	0
"Transactions" in Stock, 1862 ..	13 copies at 2s. 0d.	.	1	6	0
"	" 1863 .. 105 "	2s. 0d.	10	10	0
"	" 1864 .. 116 "	3s. 0d.	17	8	0
"	" 1865 .. 112 "	2s. 6d.	14	0	0
"	" 1866 .. 89 "	3s. 0d.	13	7	0
"	" 1867 .. 87 "	6s. 0d.	26	2	0
"	" 1868 .. 59 "	6s. 6d.	19	3	6
"	" 1869 .. 7 "	12s. 0d.	4	4	0
"	" 1870 .. 36 "	6s. 0d.	10	16	0
"	" 1871 .. 36 "	6s. 6d.	11	14	0
"	" 1872 .. 5 "	15s. 0d.	3	15	0
"	" 1873 .. 43 "	6s. 0d.	12	18	0
"	" 1874 .. 46 "	8s. 6d.	19	11	0
"	" 1875 .. 24 "	10s. 0d.	12	0	0
"	" 1876 .. 29 "	12s. 0d.	17	8	0
"	" 1877 .. 31 "	6s. 0d.	9	6	0
			<u>£437</u>	<u>13</u>	<u>3</u>

(Signed)

W. HARPLEY,

Hon. Secretary.

"When the number of copies in hand of any part of the 'Transactions' is reduced to twenty, the price per copy shall be increased 25 per cent.; and when the number has been reduced to ten copies, the price shall be increased 50 per cent. on the original price."—*Standing Order*, No. 21.

The "Transactions" in stock are insured against fire in the sum of £200.

* The balance in the Treasurer's hand (£37 4s. 9d.) is indebted to capital to the amount of £107 0s. 6d. (—Life Compositions, £85 + Prepaid Annual Contributions, £22 0s. 6d.)

RESOLUTIONS APPOINTING COMMITTEES,

Made by the Council at the Meeting at Paignton.

JULY, 1878.

That Mr. C. Spence Bate, Ven. Archdeacon Earle, Rev. W. Harpley, Rev. Treasurer Hawker, Mr. R. J. King, and Mr. W. Pengelly be a Committee for the purpose of considering at what place the Association shall hold its Meeting in 1880, and who shall be invited to be the Officers at that Meeting; that Mr. Pengelly be the Secretary; and that they be requested to report to the next Winter Meeting of the Council.

That Mr. P. F. S. Amery, Mr. H. S. Gill, Mr. E. E. Glyde, Dr. W. C. Lake, Mr. E. Parfitt, Mr. W. Pengelly, Dr. W. T. Radford, Rev. T. R. R. Stebbing, and Mr. E. Vivian be a Committee for the purpose of making and obtaining observations on a uniform system on the Meteorology of Devonshire; and that Dr. Lake be the Secretary.

That Mr. George Doe, Rev. W. Harpley, Mr. N. S. Heineken, Mr. H. S. Gill, Mr. R. J. King, Mr. E. Parfitt, Mr. W. Pengelly, and Mr. J. Brooking Rowe be a Committee for the purpose of noting the discovery or occurrence of such Facts in any department of scientific inquiry, and connected with Devonshire, as it may be desirable to place on permanent record, but which may not be of sufficient importance in themselves to form the subjects of separate papers; and that Mr. Pengelly be the Secretary.

That Mr. P. F. S. Amery, Mr. R. Dymond, Rev. W. Harpley, Mr. P. Q. Karkeek, Mr. R. J. King, and Mr. J. Brooking Rowe be a Committee for the purpose of collecting notes on Devonshire Folk-Lore; and that Mr. King be the Secretary.

That Mr. R. Dymond, Rev. Treasurer Hawker, Mr. P. Q. Karkeek, Mr. R. J. King, and Mr. R. N. Worth be a Committee to prepare memoirs on Devonshire Celebrities; and that the Rev. Treasurer Hawker be the Secretary.

That Mr. R. Dymond, Rev. Treasurer Hawker, Mr. R. J. King, and Mr. R. N. Worth be a Committee to prepare a Report on the Public and Private Collections of Works of Art in Devonshire; and that Mr. King be the Secretary.

That Mr. J. S. Amery, Mr. C. Spence Bate, Mr. W. F. Collier, Mr. J. Divett, Mr. R. Dymond, Mr. G. Hirtzel, Rev. W. Harpley, Rev. Treasurer Hawker, Mr. F. H. Firth, Mr. R. J. King, Mr. W. Lavers, Mr. G. W. Ormerod, Mr. W. Pengelly, Mr. J. Brooking Rowe, and Rev. W. H. Thornton be a Committee for the purpose of carrying out the recommendations contained in the report of the Dartmoor Committee submitted to the Association by the Committee on the 1st of August, 1877; and that Mr. W. F. Collier be the Secretary.

That Mr. J. S. Amery, Mr. G. Doe, Mr. R. Dymond, Mr. F. H. Firth, Mr. P. O. Hutchinson, Mr. P. Q. Karkeek, Dr. W. C. Lake, and Mr. W. Pengelly be a Committee for the purpose of noting and recording the existing use of any Verbal Provincialisms in Devonshire, in either written or spoken language, not included in the lists published in the Transactions of the Association; and that Mr. F. H. Firth be the Secretary.

That Mr. J. S. Amery, Mr. J. B. Davidson, Mr. G. Doe, Mr. R. Dymond, Ven. Archdeacon Earle, Rev. W. Harpley, Mr. J. S. Hurrell, Mr. P. O. Hutchinson, Mr. R. J. King, Mr. J. Brooking Rowe, and Mr. R. N. Worth be a Committee for editing and annotating such parts of *Domesday Book* as relate to Devonshire; and that Mr. J. Brooking Rowe be the Secretary.

That Mr. C. Spence Bate, Mr. G. Doe, Mr. P. O. Hutchinson, Mr. R. J. King, Mr. E. Parfitt, Mr. J. Brooking Rowe, and Mr. R. N. Worth be a Committee to collect and record facts relating to Barrows in Devonshire, exclusive of Dartmoor, and to take steps where possible for their investigation; and that Mr. R. N. Worth be the Secretary.

That Mr. G. Doe, Mr. R. Dymond, Mr. A. W. Hurrell, Mr. G. W. Ormerod, Mr. J. Brooking Rowe, and Mr. E. Windeatt be a Committee to obtain information as to the peculiar tenures of land, and as to customs of Manor Courts in Devonshire (except Dartmoor); and that Mr. E. Windeatt be the Secretary.

That Mr. Pengelly be requested to continue to collect and edit the Literature of the Devonshire Caverns.

PRESIDENT'S ADDRESS.

LADIES AND GENTLEMEN,—The greatest of all afflictions has befallen your learned and much-respected President, Mr. Wm. Froude, in the loss of that amiable and highly-gifted lady his wife. This calamity befell him on Wednesday last, and we are not only true sympathisers with his sorrows, but you are indeed sufferers through the loss of a President who would have charmed and enlightened his hearers.

I am now before you in the unenviable position of a substitute: as “a ram caught in a thicket,” or one “from the highways, hedges and ditches,” who with little warning is expected to fulfil the duties that would have been so ably performed by our regretted friend. Believe me that I have only been persuaded to accept the honour of this vacant chair from feelings of deep personal friendship towards Mr. Froude, to relieve him from a position of embarrassment. At the same time I must apologize to this Association as a stranger to its rules and customs should my address extend beyond Devonian latitudes.

As a recent settler in this beautiful and interesting county, I have not the presumption to attempt an address upon Devonshire topics to an audience so thoroughly acquainted with the locality; but as “knowledge” commands the attention of the civilized world, and is unfettered by the narrow boundaries of conventional landmarks, I shall venture to invite your attention to the general progress of science and its practical results.

If we reflect upon Biblical Chronology, and accept the assumption that our crust of Earth has been only fifty-nine centuries in development, we shall regard with amazement the vast disproportion of the last half-century in the advance of scientific discovery, political and religious freedom, and general civilization, as compared with the former gradual progress of mankind. This extension of knowledge and

practical science marks an extraordinary epoch in the history of the human race.

The spirit of progress has moved over the face of the world, and in order to appreciate the stride of the last fifty years we must recall the position which we occupied in the year 1828. At that time England was considered a highly civilized country, and some optimists imagined that the end of the world was drawing near, as we had reached our zenith, and nothing more remained but that the ripened fruit should perish. In reality fifty years ago we were in a state of comparative scientific darkness; it was a darkness that could practically be felt by every individual who hurriedly attempted to procure a light.

I am now referring to that apparently distant past which may be designated as "the Pre-Lucifer period." There may be persons now present whose early recollections are associated with the almost forgotten tinder-box.

At that stage of slow development the flint and steel were the ordinary means of procuring fire, and to strike a light required considerable practice; large and clumsy brimstone matches were used to obtain a flame when a spark had ignited the tinder. The first inventions of self-igniting matches were exceedingly dangerous, as sulphuric acid was carried in a small phial, into which the lucifers were dipped to produce combustion. Various modifications took place until the safety lucifers were invented: thus some of the earliest improvements of the half-century were the simple method of lighting a candle, the introduction of plaited wicks, and the abolition of snuffers.

The improvement in domestic life and habits was a very gradual process. The old hackney coach and the cabriolet were the public conveyances of London. There were no omnibuses until 1829, and these were of a most inferior description, while the proprietor was uncontrolled in fixing his own fares.

We become so rapidly accustomed to social changes that we are apt to forget the necessities which caused such reforms. The police, or "Peelers," were, as is well known, organized during the administration of Sir Robert Peel, and their appearance was certainly the most important municipal improvement of the last half-century. Before the "New Police" became an institution, the city of London was nominally protected by a class of watchmen commonly known as "Charlies:" these were a very inferior body of men, both morally and physically, and in many instances they were the

confederates of thieves. At that time it was difficult to sleep throughout the night, as the watchmen were compelled to cry out the hours and half hours in a loud voice, to prove that they were upon their beat, and not asleep; the thieves accordingly profited by hearing the exact position of the guardians.

With the improvement in police a rapid advance was effected in prison discipline. Reformatories were established. Philanthropists devoted their energies to a much-needed change throughout the various establishments for the insane. The horrors of the old madhouse gave way to a system of kindness and gentle treatment; private asylums were organized, and the rapid advance of civilization was exhibited by a general extension of mercy and sympathy. Punishments for crime had been excessively severe, and executions were so frequent that life was but lightly valued: a case is reported of a man being hung for stealing sixpence on the king's highway! (This was a hundred years ago.) During our last half-century the disgusting exhibitions of public executions have been discontinued, and to us it appears incredible that such a brutal indecency could have been sanctioned during our own time.

Although the general education of the lower classes had been much neglected, a step was taken by the Government which produced a strong collateral effect in exciting the desire to write and read: this was the reduction of the rate of postage to one penny. Formerly the postal charge for a letter varied according to the distance: ninepence was not an uncommon tax from London to the Midland Counties. In those days a letter was a large square sheet of paper, which was folded up and sealed with wax. Envelopes did not exist.

The reduction of charge, and the introduction of postage stamps, created an extraordinary increase in social correspondence. This necessitated an improvement in the quality and quantity of stationery. Few contrasts are more striking than the comparison of letters written fifty years ago, with the improved paper of the present day. At that comparatively recent date steel pens were not in general use, but all writing was the work of the goose-quill.

But we must reflect, that as the reduction of our postage rate increased our social correspondence, so in like manner the facilities of railway travelling multiplied travellers. When Stephenson first invented the locomotive (the original is still to be seen at Darlington) he considered that it might perhaps attain a speed of twelve miles an hour with safety.

Science is inductive; and no branch of art has exhibited this principle in so high a degree as engineering. It is the engineer who has been the civilizer of the globe.

We may assume that countries which by their geographical position are excluded from general intercourse with the world, are those which will remain in a state of non-progression or barbarism; it is therefore a logical conclusion that civilization depends upon general intercourse, and he who facilitates that intercourse must be the civilizing agent. In tracing the extraordinary development of the last half-century, we must direct our attention to the science of practical and mechanical engineering. The change has been rapid, from coaches that conveyed a few persons at the rate of twelve miles an hour, to trains which convey multitudes at fifty miles an hour. The inland mercantile transport was accomplished by vans or by canals at the rate of three or four miles per hour, and it now appears to us impossible that the vast affairs of this country should have found a vent by such slow and contracted means.

The first railway was from Liverpool to Manchester; this was a new wonder that caused much difference of opinion. There were few persons at that time who could appreciate the extraordinary reform which the rail and locomotive would so rapidly accomplish. The landed gentry were strongly opposed to the innovation, and the greatest opposition was offered to the bills in Parliament. It was declared that fox-hunting would become impossible, as hounds and horses could not cross the lines of railway; the high roads would become impassable, as they would be neglected when the public traffic should be transferred to the rail; the innkeepers would be ruined; the blacksmiths who shod the coach-horses would be thrown out of work; the price of horses would fall to zero, as all travelling would be done by steam; the stage coachmen would starve; the beauty of an English landscape would be utterly destroyed, and England would no longer be fit to live in, when it should be intersected by a network of railways, with smoking and screaming engines. In spite of these dismal prophecies the engineering skill of this country received a prodigious stimulus by the introduction of the rail and steam. The iron trade was further developed, and the general industry of the country acknowledged the new impulse. Continental states followed our example, and English workmen, plate-layers, navvies, and engine-drivers were imported to carry out the operations, the knowledge of which was then confined to England.

The improvements in the steam-engine made rapid progress,

but although steam vessels (then called steam-boats) had for a long time been introduced upon our narrow seas, no one had as yet presumed to venture across the ocean; it was at length suggested that an experiment should be made towards America. In the year 1838 the *Great Western* was built at Bristol, a fine vessel of 1400 tons. The voyage of Columbus for the unknown land could hardly have provoked more discussion than the enterprise of the first ocean steamers.

The *Great Western* was pronounced by several naval authorities as too long, and liable to break her back upon the crest of an Atlantic wave! She falsified the prophets of evil by arriving in fifteen days, with about 150 tons of coal to spare. Although in 1802 a steam tug had been built by Symington to draw barges on a canal in Scotland, there was no steam-vessel in actual public traffic until 1812, when Mr. Bell first started the little *Comet* upon the Clyde; this vessel plied regularly, and the river Clyde, now so renowned for shipbuilding, had the honour of introducing steam navigation to Great Britain nearly a year and a half before a steamer floated upon the Thames.

The rapid development of steam vessels will be well exhibited by a reference to dates. The first upon the Clyde in 1812; the ocean steamer *Great Western* in 1838—and the largest vessel at present in the world, the *Great Eastern* of 19,000 tons, in 1859. In 1836 the screw was adopted as a propeller, and after a few years it in a great degree superseded the use of paddles.

In about the year 1839 iron first appeared as a substitute for wood in shipbuilding. This innovation was scoffed at by the ignorant, until practice established the superiority of metal, and from that period iron has held its sway; the wooden walls of England have been superseded by armour plates of iron and steel.

The development of ocean steamers has been the means of uniting the most distant portions of our colonial empire. It was the boast of England fifty years ago that "the sun never sets upon our possessions," but this boast expressed our weakness. The extent and severance of those colonies were so immense that we had no means of communication, except by the slow and uncertain vessels which depended upon the fickleness of winds.

In the days of the old East India Company their splendid sailing vessels were six months on the voyage to China. A letter addressed to England from Calcutta seldom received a reply under twelve months.

The first step towards the improvement of Eastern steam communication was the establishment of the Peninsular and Oriental Company. The *Precursor* was, I believe, the first vessel that went to the Suez station *via* the Cape of Good Hope, and the mails which were termed "the Overland" crossed the Isthmus of Suez from Alexandria.

The arrangements for conveying the mails by the desert route of Suez were due to the suggestion and practical ability of Lieut. Waghorn, R.N., one of the early pioneers of civilization.

The passengers were then conveyed in vans from Cairo to Suez, a distance of about eighty miles. Ladies and children suffered superlative discomfort; while the entire cargo of merchandise, mails, &c., was transported upon camels. It is hardly possible to imagine in these days of luxurious travelling the trouble and inconvenience of the old overland route during the hot season. At length the railway movement spread towards the East, and a line was laid down from Alexandria to Cairo, and thence to Suez. The difficulties of the overland route were forgotten, or were related as a tale of barbarous times, until the grand change in Eastern engineering was accomplished through the untiring energy of Mons. de Lesseps, and in 1869 the mercantile fleets of the world steamed through the Suez Canal.

The history of this great work is too important to pass over in silence, although it would be impossible to enter into details. The actual digging of a canal to connect the two seas was not a new idea, but was simply a modification of the ancient canal of Egypt that was the original work of King Rameses II. In those remote periods when the Pharaohs ruled in Egypt, the necessity was acknowledged that water communication should exist between the Nile and the Red Sea. There were no steam-dredgers in those days; but the mandate of the despot summoned multitudes of human beings, who by the sheer force of numbers carried away the earth and formed a canal. Thus in like manner as the Pyramids were erected, so were the other public works created by the hands of living crowds. The canal of the Pharaohs left the Nile at Bubastis, not far from the present freshwater canal which supplies Ismailia in the Suez desert, and the Suez embouchure was protected by sluice gates, owing to the difference in the level between that point of the Nile and the Red Sea. This great work was subject to the neglect occasioned by wars and political disturbance; thus it was frequently abandoned, and became choked with

sand. It was reopened in various reigns; the last time by the Caliph Omar, but it relapsed into disuse, and for many centuries had ceased to exist until Mons. de Lesseps undertook the new work during this half century of progress.

The plan adopted differed from the ancient canal, as it commenced direct from the Mediterranean at Port Said, thus entirely avoiding the Nile. The British Government perceived the vast political importance of such a channel of communication, and certainly the French received no cordiality or assistance from England during the progress of the enterprise. The well-known engineer, the late Robert Stephenson, made an adverse report upon the engineering possibility of the canal, and the French were regarded as committed to a hopeless undertaking.

The scene has changed; the canal is become not only a grand established fact, but the British Government is the great shareholder, and "British Interests" are declared and concentrated in the channel of the Pharaohs.

It is a strange and mysterious revulsion in the history of nations, that England, which was in the days of Egyptian greatness an island inhabited by barbarians, naked and painted with woad, paddling along their barren shores in frail canoes, should now represent in the land of Egypt the grand mercantile spirit of the world, exhibited by the ceaseless traffic of her steamers upon the Suez Canal.

The engineering skill of modern times has effected the most marvellous changes. The engineer is at perpetual war with the obstacles of nature. We have glanced at the improvements in commercial ship-building, and we may trace even greater results in the varied industries of the main land. When the railways were commenced, the hills opposed their level; these were at once bored through in tunnels; even the Alps were pierced after nine years' hard labour at Mont Cenis. The Saltash Bridge marks the genius of Brunel. The great bridge of Menai Straits, the underground railway of the Metropolis, and other works of vast magnitude that would have confounded the builders of the Pyramids, are now monuments of engineering skill. The extension of public works has stimulated the energies of the mechanical engineer and the metallurgist.

We have attained such marvellous exactness in Whitworth's instruments and tools that they are recognized throughout the world: the sewing machine has sprung from the inventive genius of America; we draw steel tubes from the cold metal by hydraulic power with the same apparent ease that clay is

formed into a draining pipe. We have endless varieties of machines for lace-making, hosiery, and manufactures of the most delicate texture; and from these we turn towards those Cyclopean objects—the thundering fifty-ton hammer of Nasmyth, and the rolling mill that delivers a twenty-four-inch armour-plate as smooth as dough rolled upon the pasteboard.

In directing our attention to the advance of engineering skill and the general progress of the last half-century, we must feel a certain sadness in an allusion to the hundred-ton guns and the steel armour-plates which mark the questionable improvement of the period. It appears that the material progress of society is not accompanied by that moral equilibrium which optimists have predicted would nullify brute force. At the same time that we send missionaries to preach peace in distant lands, the thunder of these enormous cannon is mocking the name of peace at home. Hand in hand with the advance in commercial or civil engineering, the military engineer is striving towards new methods of wholesale devastation. Our architects devise magnificent structures for philanthropic objects; we see around us hospitals like palaces, at the same time we invent the devilish torpedo to shatter and to found a ship with a thousand fellow-creatures. Thus in spite of moral theories, the world retains the material law of force. It *was* an iron age, and it *is* an iron age.

The working in metals is the most ancient trade; Tubal-Cain, the blacksmith, is the first historical mechanic, and there is no country in the world, howsoever savage, which does not work in iron if the surface ore is present. This is a curious fact which exhibits one of the principal necessities of man; he must have a weapon, a tool, and an agricultural implement.

The savage in every portion of the world uses the same process—a clay furnace, bellows, charcoal, and sand as a flux; but he cannot reduce iron ore to a molten state. With excessive labour he produces a waxy compound of iron, mingled with vitrified sand, which through repeated heating and continual hammering he purifies by blows, until he obtains iron of the highest possible quality. But such iron could not possibly be supplied in large quantities; it is the result of an amount of manual labour that would, in a civilised country, absorb a disproportioned outlay of time and capital.

We find that the increasing demand for machinery throughout the world has necessitated an increased supply, and chemistry within the last half-century has come to our assistance in producing both iron and steel at a cost so reduced as to meet our immense requirements.

Sir Joseph Whitworth invented the process of compressing iron while in a fluid or molten state by means of hydraulic power, so as to purify it by absolute pressure. The weight of many hundred tons upon the square foot completely expels all air, which would otherwise form bubbles or defects, and it materially increases the density of the metal. Thus a cubic inch of the compressed steel weighs considerably more than the same volume of similar quality uncompressed. The metal thus treated gains in strength to so extraordinary a degree that Sir J. Whitworth has tested sections of tubes by loading them with gunpowder, and afterwards securing both ends by screw plugs; the powder was then ignited by a touch-hole, and instead of bursting the barrel like a shell, the entire charge burnt itself out by rushing through the minute vent. The Whitworth shield, composed of this fluid-compressed steel, has withstood the most crushing fire of heavy guns, and bids fair to gain the victory in the struggle between armour and artillery.

Most people are conversant with Sir William Palliser's invention of chilled shot, by which process iron is rendered so hard that it resists the file, and thus enables us to pierce armour-plates with shot costing £2 10s. each, instead of using steel shot of the same calibre at a cost of £15.

One of the greatest strides in the manufacture of steel has been made within a very recent period—1855. Bessemer, a German, whose name is now great throughout the world, invented a process of converting iron into steel by the apparently simple method of forcing a blast of common air through the molten metal. Before this invention the manufacture of steel was a tedious and expensive process, which entailed the necessity of costly works. Mr. Bessemer succeeded in converting pig-iron into steel by only one direct movement. This was accomplished by supplying sufficient oxygen by means of a powerful steam blast of the common atmosphere forced through the furnace of molten iron. This supply of oxygen (injected from the bottom) increased the heat of the metal to an intense degree, and literally consumed the required amount of carbon and silicon, thus reducing the iron at once to the condition of steel.

The amount of oxygen could be exactly regulated so as to produce the various qualities of steel that might be required. The result of this improvement was a sudden reform in steel manufacture, and the price of £12 or £15 now represents the former cost of £60 or £70.

Such inventors are among the greatest benefactors of the

world. As I have before remarked, science is inductive, and one new discovery becomes the starting-point for extended improvement. The uses of steel are multiplying in the ratio of its reduction in cost. The wire ropes for standing rigging and other numerous purposes are modern inventions. The ribs of umbrellas were formerly of whalebone; these have been superseded by steel. A few years ago, when crinolines were worn, ladies were surrounded by steel hoops. Our mattresses and sofas are furnished with steel springs; and in fact it would be endless to enumerate the many and varied domestic uses of this indispensable metal.

The demand for naval engines of immense size, together with monster guns and armour-plates capable of resisting their attack, has given an increased impetus to the manufacture of iron and steel of exquisite quality.

The first armour-plated vessels were suggested by the late Emperor Napoleon III., and they were used at the attack upon Kinburn with great success during the Crimean war. It quickly became evident that iron would vanquish wood, and by degrees the navies of the whole world underwent an extraordinary transformation.

An amicable struggle commenced between the artillerist and the naval constructor. No sooner was an armour-plated vessel produced which was declared to be invulnerable, than an improved gun appeared which penetrated the vain covering. Again the armour was thickened with the toughest metal. Steel and iron backed by teak were tried, and once more were pronounced impregnable; but the Woolwich Infant of thirty-eight tons was born, which smashed through the strongest plating.

The rolling mills of Messrs. Cammell and Co. have now turned out plates of twenty-four inches in thickness; but the eighty and even hundred-ton guns have quickly challenged the power of protective armour.

It is interesting to compare the artillery and rifles of the present day with those used in the Crimean war, only twenty-two years since. At that time the largest guns in the British service were carried by the *Majestic*. She mounted on her

Lower deck	. .	32 guns	. .	68 lbs.	} Total force of broadside, 2082 lbs.
" "	. .	8 "	. .	84 lbs.	
Upper deck	. .	39 "	. .	32 lbs.	
" "	. .	1 "	. .	68 lbs.	
80 guns.					

The *Inflexible* and her class will now carry four guns of eighty tons each, while the Italian ships *Dandolo* and *Duillio* will each mount four one hundred-ton Armstrong guns—these four guns throwing a weight of shot more than three times greater than the forty broadside guns of the *Majestic*!

The improvements in small arms have kept pace with those in heavy artillery. The Enfield rifle was first used generally during the Crimean war, and it was quickly discovered that cavalry could not approach infantry armed with the new weapons of precision. Some years later the breech-loading system was introduced, and almost every country that adopted this military weapon adhered to a separate and special pattern. The English preferred the Snider, which has already been superseded by the Henry-Martini. In the recent struggle between Russia and Turkey, the destruction of life has been caused almost wholly by the precision, rapidity of fire, and extreme range of the modern rifles.

The breech-loading rifle has necessitated a change in the movements of infantry. Cavalry dare not expose themselves at the distance of a mile. This is a very extraordinary instance of rapid improvement since public attention was directed to the question of military rifles in 1854, as the destructive power of small arms has created a radical reform in military evolutions.

Fifty years ago our fathers' sporting guns were flint and steel, and percussion locks were not in general use until about 1830; thus within half-a-century we have witnessed the stride in firearms from the old flint and steel "Brown Bess" or smooth-bore musket, and the thirty-two pounder broadside naval cannon, to the breech-loading long range rifle, and the hundred ton rifled breech-loading gun!

Philanthropists would hope that civilization may draw us nearer to each other, but material science simply enables us to kill each other at longer ranges.

Although improvements in the quality and working of iron and steel have enabled us to bring weapons of destruction to fearful perfection, it is strange that no chemical invention has to the present moment superseded the use of ordinary gunpowder as the propelling explosive power. The component parts of gunpowder remain unchanged, but the result of exhaustive experiments has merely proved that an alteration in the size of the grain is necessitated by the calibre, length of bore, and general requirements of the gun; thus the eighty-ton gun is charged with powder commonly termed

"pebble," represented by cubes of $1\frac{1}{4}$ inch, while the ordinary rifle is charged with the small grain known as No. 6, and the shot-gun or fowling-piece is usually loaded with No. 3.

The new explosives which have been accepted as practical agents are dynamite and gun-cotton. The former is a modified form of the more dangerous nitro-glycerine, and the latter appeared in public about 1848, curiously enough at a time when a general political explosion occurred throughout Europe. A similar preparation to that of cotton has been applied to sawdust, but it is so susceptible to damp that it will never practically usurp the place of gunpowder.

We will now take leave of all destructive agents, and turn to those recent inventions and improvements which have tended to civilize and add to the material happiness of mankind. When, upon looking back to the commencement of the last half-century, we are astonished at the strides we have advanced, we must reflect upon one of the chief causes of this grand result. I believe that the original Exhibition of All Nations in 1851 was the root of the tree of progress. If we who can remember the preceding years recall the miserable want of taste displayed in the contents of our streets before the great International Exhibition, we shall at once acknowledge the result.

Civilization, the arts, and sciences, depend upon the general intercourse of mankind. If a nation of islanders were restricted to the limits of their island, their tastes, pursuits, and music might be harmonious, but they would be tarnished by the absence of refinement; their originality might interest a stranger, but a tinge of barbarism would mark them in the general exhibition of the world. Thus the first great International Exhibition of 1851 brought together, under the crystal roof of Paxton, the manufacturers of all nations. We were proud of our superiority in gigantic locomotives, in steam-engines generally, in great works of forging iron, but we acknowledged the refined taste of France, the delicacy of her tints and dyes, the beauty of her artistic designs. Our glass manufacture had stagnated under the incubus of a repressive tax, and we felt ashamed in our comparison with France and Bohemia. The ornamental leather-work of Austria was almost unknown in English industry. Our china, although well represented by Derby and Worcester, was inferior in artistic design, and especially in painting. The printing of Manchester goods was coarse compared with the delicate patterns upon the French chintzes,

bretonnes, and muslins; and in fact the productions of our country were hardly caricatured when described in a pamphlet by a Russian visitor, who wrote—

“I was impressed while in England with the general exhibition of rude strength which pervades the manufactures of the country; their lucifer matches are thick enough for walking-sticks, and one of their ordinary loaves of bread would kill two Russian countesses.”

This was the impression of 1851; but if we turn to the Paris Exhibition of 1866 we shall be gratified by the marvellous progress displayed in the department of Great Britain. Admiring crowds thronged to the English glass, which surpassed all other in brilliancy. This was a main result of the abolition of the objectionable tax upon the crude material, which had hampered all experimental improvements.

The porcelain represented by Minton, and the Worcester collection of Chamberlain, together with some others, was an admirable proof of the success of competition since the World's Show of 1851.

Among the many improvements of this pregnant half-century, there is one which has specially added to the personal comfort of mankind. India-rubber or Caoutchouc was used chiefly for rubbing out pencil marks, until in 1820 Mr. T. Hancock took out the first patent, and endeavoured to utilise thin strips of the raw material for producing elastic boots, shoes, braces, garters, glove-wrists, and the various articles of dress. The immense value of the new invention was immediately recognised by the public, and Mr. Hancock continued various experiments in liquefying and otherwise manipulating this refractory material, until in 1825 he became connected with Mr. MacIntosh, who had produced a certain solution at his establishment in Glasgow for rendering cloth waterproof. Hancock and MacIntosh having registered their patents, commenced the trade; but they were opposed by the tailors, who pretended that the material could not be worked up into garments, and it was not until 1826 that what are now called “macintosh” coats could be procured by the public, through the exertions of Messrs. Hancock and MacIntosh, who themselves manufactured this invaluable material into clothing. Up to that time a traveller upon a stage-coach or in an open carriage was almost helpless if waterproof, from the enormous weight of what was called a box-coat, built up of double-milled cloth in a multiplicity of capes. It is frequently remarked that in the present day we live to a greater age than our ancestors, and this is attributed

to various causes, such as improvements in sanitary regulations, the advance in medical science, &c.; but I think we may determine that we have become a drier generation, and, that owing to Messrs. Hancock and Mac Intosh (our benefactors), we are not so frequently wet through as our fathers were.

The defects of all India-rubber manufactures were generally admitted in the change of the material with varying degrees of temperature. It was not until 1842 that a means was discovered almost simultaneously by Mr. Hancock and by an American, Mr. Goodyear, of preparing India-rubber by an admixture of sulphur that would render it callous to the changes of weather. Since that period, vulcanised India-rubber has taken its position as an absolute necessity, and considering the innumerable applications of caoutchouc in the present day, we can hardly imagine how the last generation existed without such an aid. In 1850 the imports of India-rubber amounted to 800,000 lbs. They are now counted by many millions, and the collateral benefit is conferred upon semi-savages by affording them an honest employment in the collection of the material, in countries where such natural productions had never known an outlet. This is the true and direct method of civilizing wild tribes, by developing some article of commerce that will direct their energies to an industrious occupation.

In the course of this evening's address it is only possible to touch lightly upon the most prominent points of interest, and to acknowledge the value of many important objects by simple enumeration. We have already noticed the improvement in British glass since the oppressive tax was removed in 1845, and one of the most remarkable results has been exhibited in the quality of lenses for telescopes and general optical purposes. The French, even to this day, surpass us in the production of plate-glass for mirrors, of a whiter colour and greater brilliancy than the well-known British plate, and the Germans take the lead in cheap spectacles and opera glasses, but a first-class English telescope now possesses a lens of home production, whereas fifty years ago we were mainly dependent upon foreign manufacture. The importance of this general advance in the high qualities of glass for telescope lenses is apparent in the increasing astronomical discoveries. In these days of thirst for knowledge it is hard to fix a limit upon our acquaintance with the heavens, and we may yet succeed in producing lenses that will reveal new and unexpected mysteries.

The American discovery of the tiny satellites of Mars,

which are calculated as ten miles only in diameter, is the most recent prize gained by astronomy. There is no science which so completely shatters the selfish egotism of man and proves his utter insignificance. As every increased diameter of a lens reveals to us new worlds, and brings out from the brightness of the milky-way faint tiny points which we know are suns, still we behold behind those newly-discovered stars a glow of light produced by stars or suns as yet invisible, and the mind sinks exhausted in the contemplation of such eternity of space in which our own globe is but a grain of sand. Thus by the apparently simple advance in the purity of glass and the aid of metallic reflectors, we bring new telescopic worlds into view from immeasurable distances; at the same time, by the minute microscopic lens, we discover worlds without end even in a few drops of water.

The spectroscope has determined the various gases of the sun and planets, so that we can almost with certainty declare their substance; while the microscope has led us into the mysterious origin of life and dispelled the theory of spontaneous generation.

Electro-metallurgy was a science developed by Professor Daniell, of King's College, in 1839, and the electrotype process of covering substances with a metallic deposit was shortly introduced by Elkington, who applied the voltaic battery to the arts of plating and gilding, since which time the reproduction of copies of every kind, including moulds, wood-block engravings, antique *répoussé*, and other innumerable uses, have rendered the electrotype one of the most valuable inventions of the age.

Among the numerous classes of science chemistry has, within the last half-century, conferred many blessings upon society. Fifty years ago we were dependent upon miniature painters for a portrait, which, unless the work of a first-rate and expensive artist, was a painful caricature. The poorer classes were satisfied with outlines of their features and figures cut from black paper.

In the year 1839 the various experiments of chemists resulted in the public introduction of photography. It was hardly a new art, as the principle had been already discovered by Sir Humphry Davy and Mr. Wedgwood (a brother of the famous porcelain manufacturer) in the commencement of the present century; but it had never been practically developed until the investigations of Monsieur Daguerre and Mr. Fox Talbot enabled them to exhibit it to the public. Like most inventions in their infancy, the first efforts were only

the foundation of the art; nevertheless the results were so generally attractive that men of the highest science devoted themselves to photographic research. The extension of this art was so rapid that it spread throughout the world; it was soon considered absolutely necessary to be photographed; and this boon to the human race can hardly be appreciated until we consider its wonderful utility. We now assemble our relatives and friends in the same crowded volume, as they literally are, and not as an artist would make them appear to be. We know intimately the person of every crowned head, and the various members of the royal families throughout the civilized world. We are introduced to the magnificent edifices of distant lands, and in the truth and fidelity of photography we can study the infinite details of Eastern architecture, and preserve the inscriptions of thousands of years gone by. We can revel in the mighty landscape of the Himalayas while sitting in our own home; and without the expense or fatigue of voyaging, we can wander through the Egyptian temples and decipher every hieroglyphic upon their walls. Not only are the scenes of foreign countries brought before us so distinctly that we can study the foliage of every tree, but the inhabitants of every clime, from the Esquimaux to the naked warriors of New Guinea, are depicted with the unquestionable proof of their own reflection. It is beyond my province to enumerate all the services of photographic art: the living friends when far distant are brought near; the dead appear to return to us again. And now another science has appeared which, although not fully developed, bids fair to work wonders that seem incredible. The telephone will enable us to hear the actual voice, and to reply at a distance, even by communication beneath the sea! and the phonograph and microphone prove that we are now entering upon the great mysteries of acoustic science.

Before leaving the subject of chemistry, we must acknowledge the great results of the half-century in the discovery of medical products, especially the alkaloids of various vegetable substances; among these quinine stands pre-eminent as a specific in cases of ague and marsh fever. This preparation of the alkaloid of cinchona (sulphate of quinine) has been an extraordinary agent in the development of geographical science; it has enabled the explorers of modern times to penetrate the secrets of vast continents hitherto unknown to the world, as they had been invested with a zone of malaria which had defied and destroyed all who had attempted the fatal enterprise. The inhalation of chloroform,

or of chloric ether, has been one of the grand results of medical science in relieving the agony of surgical operations. With the advance in chemical knowledge there has been a corresponding change in general medical treatment. When we look back to the regime of fifty years ago, we are surprised at the violent remedies (?) that were then considered necessary. Bleeding was practised so commonly that it was rare to find an individual who had escaped the operation; leeches were kept almost in every house to be ready when needed; in fact, the system of depletion was exactly the reverse of the practice of the present day. Calomel, antimony, blue pill, black dose, jalap, scammony, assisted by blisters, setons, cuppings, and emetics, were in league with the undertaker.

The system has been changed. Our ancestors paid no attention to their drains, and swallowed quantities of strong physic; we devote attention to our sanitary arrangements, we refuse to be bled to death, and we take as little medicine as possible.

Unfortunately, in addition to improvements and new inventions, we have seen new and powerful enemies, which, before unknown to England, have during the last half century attacked both men and vegetables. Asiatic cholera, which fortunately has not visited the country for some years, first appeared in 1829, and was then termed the *cholera morbus*. The potato disease has been and still remains a serious affliction to the poor. A peculiar disease destroyed the vines in the island of Madeira. A few years later the vineyards of France suffered from a similar blight. In the face of these visitations we are forced to acknowledge the vanity of our increased knowledge, as our vaunted science appears utterly helpless in combating the plagues of which we now complain.

Nevertheless we have improved, and we are still advancing towards a higher standard; therefore the time may not be far distant when science will overcome the difficulties of antagonistic nature. Our children have advantages which their fathers did not possess; they start from a higher elevation of scientific knowledge, and this high level is their base of operations. We began at a time when pictorial illustrations (the first rudiments of infantile education) were at zero. The nursery books of the past half century are curiosities of barbarism; the rhymes and tales will last for ever, but the pictures were ill adapted for the development of the childish mind. Even the toys of a past generation were relics of

barbaric times, as represented by the imperishable ark of Noah. In that we discover the thoroughly conservative principle even to the present day, where the butterfly is larger than the cow, the grasshopper is bigger than the sheep, and Noah's wife is a head taller than the giraffe. We now possess the most admirable German toys, which are perfect specimens of natural history, moulded in papier-mâché according to the correct anatomy of the animals. Our illustrated books for children are artistically designed; the modern primer is a condensed mental nourishment, and the mind is now trained from the beginning to an improved standard of education.

With the progress of Great Britain we may include as a result the prosperity of our colonial empire. As the population of our island doubles itself in a half-century, and the immense amount of emigration assists in peopling America, Australia, New Zealand, the Cape of Good Hope, and our Indian possessions, the necessity is proved of a general education that shall enable the emigrating classes to fully represent those characteristics of the British race which have won Great Britain her renown. At the commencement of the last half-century Australia was comparatively a new settlement; it is now almost a new world. The vast wealth of our colonies is due to the energy and indomitable perseverance of our colonists. The gold of Australia was represented at the Paris Exhibition of 1866 as a huge obelisk. The wool supplies our markets. This new and untrammelled field is the breathing-space for the adventurous youth of the mother-country.

In South Africa the diamond fields of the last few years have produced fifteen millions sterling. The annexation of the Transvaal has extended our dominion, and we appear to be following our destiny in becoming the civilizing agent and colonizer of the world. In the name of peace and good-will we nevertheless possess a history of ceaseless aggression; but, unlike the aggressors of a past age, our rule is marked by justice, and by the prosperity of all classes.

We have explored and sounded the lowest depths of the ocean, which were before deemed unfathomable, and we have proved that living organisms exist at those profound depths where science had believed that life was never known.

We have penetrated into regions that were closed from pre-historic times; we have opened the sources of the Nile; discovered the fountains of the mighty Congo; Africa has been crossed and recrossed from east and west; and the vast

blank central region of old maps has been filled by recent explorations.

We have in Arctic regions discovered the North-West Passage; but we have also proved that everlasting ice is a barrier to the advance of civilization. We have developed commerce in countries where legitimate trade had been unknown; we have suppressed the infamous traffic in slaves, and broken the chains of slavery. Still we have some regrets, while recounting the benefits conferred upon mankind, in admitting a certain want of progress in our general commercial integrity. There was a time, some fifty years ago, when in every distant corner of the globe the manufactures of Great Britain found a ready market, because they were free from all suspicion. The stamp of an English manufacturer upon British goods was a passport of respectability. Throughout the East, among both civilized and savage, the name of "*English*" was accepted as the guarantee of genuine quality. Unfortunately this high reputation has departed from us. An excess of competition has lowered the standard of commercial morality, and has introduced adulteration to so enormous an extent that both at home and abroad the purchaser has become suspicious. The Manchester calicoes are loaded with Devonshire pipe-clay; reels of cotton thread, "warranted 100 yards," contain only half the quantity; prints warranted to wash, certify the assurance by washing completely out; black silks at the highest price delude the purchaser by containing four times their own weight in dye-stuffs and adulterations; pickles are green through copper; butter has but a distant connection with the cow; milk grows pale beneath a deluge of cold water. Even agricultural seeds are adulterated with dead grains to fill up the dealer's bushel.

I shall now turn towards the consideration of two objects of immense importance as direct agents of civilization—the electric telegraph and the free press of Great Britain.

In almost every country, whether savage or civilized, there have existed numerous methods of transmitting signals. The first necessary signal has in all countries been that of danger and alarm; this has been generally *fire* upon an exposed elevation, which would be observed by night, or would attract distant attention by the smoke in daylight. Among savages we find similar beacons, in addition to organized beats upon enormous drums, which can be heard according to the wind for a distance of about eight miles. Advancing civilization, which increases the necessity of

communication, must extend the power of signals; we therefore find a corresponding improvement in the invention of various systems—some which represent a language by means of flags, others that transmit intelligence through a chain of fixed stations by means of a mechanical arrangement of movable black boards, which correspond with an alphabet or numerals according to their positions. In 1796 the *Annual Register* mentions the erection of such a telegraph above the Admiralty in London, which conveyed information to Dover in seven minutes! The French semaphore was an improvement upon this method, but all ocular arrangements possessed the great defect of obscurity during fogs, or other atmospheric derangements.

For many years scientific men had endeavoured to enlist electricity as a telegraphic agent, but although several clever inventions had appeared, it was reserved for Professor Oersted of Copenhagen to discover the action of the galvanic current upon a magnetic needle. This was the starting-point for the success of the present day.

The French for a time assumed the lead under Ampère and Alexander in contriving instruments for electric telegraphy, but nothing practical appeared before the public until in 1837 Messrs. Cook and Wheatstone (the late Sir Charles Wheatstone) took out a patent for their invention. A small model was exhibited at the rooms in the Lowther Arcade, which amused the curious, as the toy telephone may do in 1878, but few people believed that this principle would evolve the greatest marvels within a quarter of a century.

The first submarine wire was laid down in 1850 for twenty-seven miles between Dover and Cape Grisnez; but the first long wire of three hundred and ten miles was laid beneath the Black Sea, from Balaclava to Varna, in 1855. In 1858 we spanned the breadth and depth of the Atlantic; thus in twenty-one years from the day when the toy model of Cook and Wheatstone was first exhibited in London, we had connected Great Britain with America!

Nothing can exceed the benefit which this wonder of our half-century has conferred upon mankind. Not only is the common intelligence called "news" transmitted from every quarter of the globe by ceaseless streams of the electric current converging upon the world's great centre (London), but the cause of humanity is assisted by telegraphic fore-warning of approaching dangers. In this scientific era we have discovered the mysteries of hurricanes, and guided by the laws of storms, we can immediately transmit intelligence

of the unexpected but inevitable tempest. We receive telegrams from America "that a storm is raging, and will burst with violence upon certain shores of Europe upon a given day." Long before the wind can travel, we are prepared for the attack; storm warnings are telegraphed around our coasts, and ships and crews are saved from the destruction.

This great blessing has been deeply felt in Egypt. In former times the river Nile swept down with unexpected violence from the far interior, carrying death and desolation in its course through the fertile delta; now the telegraph, 1,400 miles distant in Khartoum, transmits a daily register of the Nilometer, and warns Lower Egypt of the impending flood. The stream travelling at four miles an hour requires three hundred and fifty hours upon its hostile journey; thus a fortnight is afforded to the natives to prepare for the invasion, and life and property are saved.

The proof of progress in general science is found in the ubiquity of the educated mind. We cannot rest in the obscurity of ignorance, but we crave for information, which is now supplied from every portion of the globe by the telegraphic Press of this omniscient age. The Press of Great Britain is a brilliant example of the practical result of science in transmitting enlightenment to every class of society. The advance of education having enabled the lower orders to read, the power of reading has created a desire for news; we therefore find that a vast extension of thought has been attained by the masses, and people whose fathers wallowed in obtuse apathy now exhibit an increasing interest in the general politics of the world.

Thus we observe the collateral effect which science exerts upon the human mind. The telegraphs, railways, and steam-vessels of the present day have drawn into close connection the remotest points of earth, while at the same time the newspapers, daily furnished with telegraphic news, convey to the most humble cottage equally with the palace a vast store of information. The lower orders are thus brought within the realm of thought, and their minds are expanded by the consideration of subjects and affairs other than the daily labour for their bread.

Such an expansion of the mind will deal the death-blow to local superstitions. We have seen that, in proportion to the remoteness from a centre of civilization, ignorance and superstition thrive in barbarous rankness; but with the advance of science the witches disappear, the wise-man is regarded as an impostor, and the advent of the locomotive

and railway has dispelled the charms of the sorcerer, even from the once secluded vales of Devon.

And still we feel how little we really know! The increase of our scientific knowledge is but the extended view obtained by the ascent of a mountain which enlarges our horizon, and we know that by ascending higher we shall still increase the vision to an indefinite extent, all of which is new, all unknown and undiscovered; thus the more we know, the more we crave to understand.

Let us hope that the advance of science and general education will, in a future generation, exhibit a picture free from the moral blemishes of the present time, and that the result of a higher standard of knowledge will be exhibited in the decrease of crime, and the extension of a more exalted Christian spirit throughout civilized communities of the human race.

Obituary Notices.

COMPILED BY THE REV. W. HARPLEY, M.A., HON. SECRETARY OF THE ASSOCIATION.

(Read at Paignton, July, 1878.)

I.

JOHN SPARKE AMERY was born in 1812 at Narramore, in the parish of Lustleigh, Devon, and at an early age was brought to reside with his maternal uncle, Mr. P. S. Sparke, a woollen manufacturer at Ashburton. He was educated at the Grammar School of that town, under the Rev. J. White, for many years the master. This school is famous as that at which Dunning, Gifford, and Ireland, Ashburton's three worthies, were educated. On leaving school Mr. Amery immediately entered his uncle's business, to which he succeeded in 1844, on Mr. Sparke's death. In 1838 he married Frances, daughter of the Rev. T. W. Windeatt, of Totnes. In 1846, the woollen trade being very much depressed, he retired from business, and turned his attention to farming, especially to the improvement of lately-enclosed common land at Druid, near Ashburton.

He was placed on the commission of the peace for Devon in 1857, and joined the Association at its Exeter meeting in 1872.

By early family associations and religious views he was a staunch Nonconformist, and for many years filled the office of deacon of the Independent Church at Ashburton, with which his ancestors had been for generations connected.

A Liberal in politics, he took an active part in the great fights following the Reform Bill, and proposed the last member returned by Ashburton, which was disfranchised by the Act of 1868. Although not himself a literary or scientific man, he was always ready to assist any movement which had for its object the advancement of knowledge in his own neighbourhood, and he took a very warm interest in the meeting of this Association held at Ashburton in 1876, but was prevented by failing health from attending the meetings on that occasion.

He died at his residence, Druid House, Ashburton, on 7th January, 1878.

II.

RICHARD DURANT was born at Exeter, January 11th, 1791. The tomb of his parents may be seen in Bartholomew Yard, in that city. He was educated in the school at Tucker's Hill, then conducted by Philip Goye, a poet, whom he afterwards pensioned. As head of the firm of Durant and Co., silk merchants, having amassed an enormous fortune, he purchased the lovely Sharpham estate, upon the banks of the Dart, near Totnes, about the year 1840, at the cost of £110,000, where he settled down, but retained until a recent period his connection with the firm.

Mr. Durant was an active county magistrate, and a deputy-lieutenant for the county of Devon. He had also for several years occupied a seat in the Town Council of Totnes, having on more than one occasion been nominated by both political parties. He served the office of High Sheriff of the county in 1851. He was a liberal subscriber to the volunteer force, and at all the schools at Totnes he paid for the boys being drilled by the volunteer drill-sergeant. He was not prominent in political matters; but he helped forward many social reforms in the district.

Mr. Durant became a member of the Association in 1866, and for some years manifested a lively interest in its proceedings, offering hospitality on the occasion of its meeting at Dartmouth. He died July 17th, 1878, at the advanced age of nearly eighty-eight, at Sharpham, and his remains were interred in the family vault in the churchyard at Ashprington.

III.

HENRY SAMUEL ELLIS, of Fair Park, Exeter, was one of the founders of the Association, and filled the office of local secretary at its first meeting. In the following year, on the resignation of Mr. Spence Bate, he was elected one of the general secretaries, and for five years devoted himself to the duties of his office with all the zeal and energy for which he was so much distinguished, until increasing demands upon his time by other affairs, both private and public, compelled him to relinquish his post. His interest in the Association however did not cease with his retirement from office, but he afterwards frequently attended the meetings, and exerted himself to promote its welfare and prosperity. He contributed several papers, which were printed in the earlier volumes of the *Transactions*.

Mr. Ellis was a member of a family well known and long established in Exeter. Early in life he developed a taste for

scientific pursuits, devoting himself especially to the study of astronomy. He was elected a fellow of the Royal Astronomical Society, and on one occasion accompanied an expedition to Spain in one of her Majesty's ships for the purpose of making observations of a solar eclipse. He was instrumental in a great measure in procuring the alteration of time in Exeter, and in the West of England from Bath westward, from local to Greenwich time. He took some interest in botany, and also produced some fine examples in electrotype.

Mr. Ellis was an active member of the local committee in connection with the Great Exhibition in 1851. He was one of the founders of the School of Art in Exeter, and for a brief period one of its secretaries. He was also a member of the Exeter Diocesan Architectural Society, and as such was greatly conducive in bringing the members of the Archæological Association to Exeter during the mayoralty of Frederick Franklin, Esq. When the Science School was founded in Exeter, he was one among the first to give it earnest support; and he rendered his fellow-citizens signal service by the efforts he made in the establishment of the Free Library and Albert Memorial Museum, the movement for which was set on foot during the mayoralty of the late Mr. W. Kendall, whose lamented death took place only a few weeks since. He was one of the four secretaries of the Albert Museum, and in that post he laboured most abundantly and successfully.

Mr. Ellis was elected to the highest civic dignity with the acclamation of political antagonists in 1869, and his mayoralty will be memorable for the visit to Exeter of the British Association, to the members of which he extended cordial hospitality, and sustained the office of chief magistrate with dignity and credit. It is worthy of note that the Free Library and Museum Act was adopted during his mayoralty, and that the noble building, erected as a memorial to the Prince Consort, became the property of the Town Council about the same time. On his retirement from the mayor's seat, Mr. Ellis was made an alderman; but circumstances connected with the railway work which he about this time took in hand, induced him to sever his connection with the Corporation. This connection was renewed, however, no longer ago than November last, when he was elected to one of the additional aldermanic seats created by the St. Leonard's Annexation Act.

Mr. Ellis was a Charity Trustee. He was also one of the new governors of the Grammar School, and one of the trustees of the Western Provident Association. In obtaining funds

for the restoration of Exeter Cathedral he took a very active part, travelling as a deputation throughout the diocese.

Mr. Ellis's exertions extended beyond the city. He became the prime mover, if not the originator, of the Railway Shareholders' Association. He was brought forward as the shareholders' candidate for a seat on the Board of Directors of the South Devon Railway. In this contest he was defeated. Shortly after this defeat he was elected a member of the Board of Directors of the Bristol and Exeter Railway, and continued on this board until its amalgamation with the Great Western. He took a prominent part in promoting several useful extensions, of which the Culm Valley Railway—the pioneer of light lines in the West of England—may be mentioned as an example. At the time of his death Mr. Ellis held the position of Chairman of the Culm Valley Company, and he was also chairman of the Brixham line, a property which owes to his exertions the greatly improved condition of its prospects; for up to the time when Mr. Ellis took the management it had never paid a farthing dividend to its shareholders. He was director of many other lines, one in Wales.

On the 27th of April in the present year Mr. Ellis arrived at the residence of a friend, J. J. Barrow, Esq., of Holmwood, Tunbridge Wells; on the following morning he was taken seriously ill. The symptoms were of so alarming a character that Mrs. Ellis was at once telegraphed for, and the services of eminent medical men both from Tunbridge Wells and from London were obtained; but the malady was beyond their skill to arrest, and Mr. Ellis expired on the 13th May, after a fortnight's illness, at the comparatively early age of fifty-two years.

In politics Mr. Ellis was a Conservative, but never a violent partisan; and he was ever ready to help in any good work, and to relieve distress wherever he found it. His public life was an example of unostentatious labour for the good of the community, rewarded by universal respect; and his private life was such as to endear him to all who had the opportunity of associating with him.

IV.

ROBERT FOALE was born at Kingsbridge in the year 1800, and for many years carried on the business of a carrier to various parts of the county. He was a man of considerable enterprise, and during the latter part of his life he was joint proprietor of the coaches running between Kingsbridge and

Plymouth, and Kingsbridge and Kingsbridge-road Station. He was proprietor and host of the King's Arms Hotel, Kingsbridge, at which hostelry the Association dinner was held last year. He died in February, 1878, having been a member of the Association only a few months.

V.

HUGH FOWLER, M.A., was born at Torrington on February 28th, 1816. He was the eldest son of Thomas Fowler, on whose life and inventions he read a paper before the meeting of the Association at Torrington in 1875. (*Vide Transactions*, vol. vii. p. 170.) He was educated at Blundell's School, Tiverton, and from there, having gained a scholarship, he proceeded to Sidney Sussex College, Cambridge. He graduated in 1838 in double honours, and was subsequently made a fellow of his college. For some time he was second master of Blundell's School, and afterwards head master of Helston Grammar School. He was next appointed head master of Bideford School, and later (in 1854) head master of the King's School, Gloucester, which post he held until 1871, when he was presented by the Dean and Chapter of Gloucester Cathedral to the living of Barnwood, near Gloucester. This living he held until his death, and the results of his work for the few years he held it remain as standing proofs of the energy and activity which he threw into everything that he undertook.

Mr. Fowler was a keen lover of nature, and a great promoter of all that tended to the advancement of science and art. He was an ex-President of the Gloucester Literary and Scientific Association, and a member of the Cotswold Naturalists' Field Club. Geology was his favourite science, but the incessant work connected with his parish prevented him from studying it deeply. He died very suddenly of heart disease on August the 7th, 1877.

VI.

JOHN HAMLYN was senior partner in the well-known firm of Messrs. Hamlyn Brothers, woollen manufacturers, Buckfastleigh. Over half a century ago his father carried on the business of a tanner at Buckfastleigh; and as his sons grew up, he brought them into the business. After a time the eldest son started the business of a woolcomber and manufacturer, and founded the present establishment of Hamlyn Brothers. Nine years later John became associated with the firm, which commencing with four men, gradually

increased to sixty; and subsequently, by the aid of modern machinery, to five hundred and upwards. Mr. John Hamlyn was possessed of more than ordinary business abilities, and in all his dealings he was noted as an upright, straightforward man of business. In private life he was esteemed for his kindness of heart and genial nature; and among his poorer neighbours he was ever known as a man of open-handed liberality. In the performance of public duty he bore his full share, being a Guardian of the Poor, Chairman of the Buckfastleigh School Board, Commissioner of the Dart, and Chairman of the Board of Directors of the Buckfastleigh and Totnes Railway Company. By his energy and industry Mr. Hamlyn amassed large means; and not long since he built himself a prettily-situated house, overlooking the town of Buckfastleigh, and found a source of amusement and enjoyment in his leisure hours in the arrangement of Fullaford and its grounds.

Though he possessed an apparently robust constitution, yet it was not strong enough to resist the sharp attack of disease. Early on the morning of the 21st of June, 1878, after an illness of little more than three hours, he expired at Fullaford, at the age of sixty-one.

VII.

WILLIAM KENDALL was a native of Padstow; but came to Exeter, and entered the employment of the firm of Shepherd and Gains, woollen drapers, of High Street. After a time, however, he left the woollen trade, and took off the linen-drapery business carried on at that time by Messrs. Presswell and Please, at the corner of Queen Street. In 1834 he gave up this business, and returned to the old woollen trade in which he was engaged when he first came to Exeter, and for many years was a partner in the firm of Shepherd, Kendall, and Tucker. As a man of business, Mr. Kendall was highly valued in commercial circles; and among his employes he was held in great affection. Having amassed a considerable fortune, he a few years ago retired absolutely from business.

In 1862 he became mayor of Exeter; and during his mayoralty the Albert Memorial Museum was originated. In the building of the Museum his munificence was almost unbounded, and but for his aid the city would not be possessed of the fine and handsome building that now stands in Queen Street. In the same year this Association held its first annual meeting at Exeter; and Mr. Kendall not only welcomed the Association to the city in his official capacity, but was one of the vice-presidents on that occasion.

Mr. Kendall was a constant and liberal subscriber to most of the charitable and other institutions of the city; and having a warm heart and generous disposition, no charitable institution in want of assistance ever appealed to him in vain. He was mainly instrumental in bringing about the erection of the present buildings of the Wonford Asylum. He laid the foundation-stone, and on the portals of the institution his name is engraved.

In person Mr. Kendall was above the ordinary height, with handsome features, and hair of extraordinary whiteness; and his well-known figure was generally to be seen on Sunday mornings at the cathedral, where he had a stall, and was a regular attendant. Until three or four years ago he was an alderman, and at the time of his death a justice of the peace.

He died at his residence, Higher Summerlands, Exeter, on the morning of Friday, the 29th of March, 1878, in the seventy-fifth year of his age. On the previous Monday, while descending the stairs, he fell over the balustrade, a distance of five or six feet, in a state of giddiness, and besides breaking his thigh, sustained a severe shock to his nervous system. When the servants came to his assistance they found him in a state of insensibility; and thus he remained, with a lucid interval only now and then, until his death. The following interesting particulars, gleaned from his will, made the day before his death, may be adduced as proofs that his well-known generosity was active to his last moment. To the National Life-boat Institution he leaves £1,000, on condition that within two years of his death the society establish a life-boat to be named the "Exeter," and to be placed on some portion of the coast of Devon or Cornwall, or the Scilly Isles; to the West of England Deaf and Dumb Institution, to the Devon and Exeter Hospital, and to the Eye Infirmary, he leaves £500; and to St. Martha's Orphanage, in St. Sidwell's, and the Servants' Home, Exeter, £50. He also bequeaths £500 to the Albert Memorial Museum, on condition that within five years of his death additional buildings, suitable to the purposes of the Museum, are erected at the back of the present structure.

VIII.

ALEXANDER MOORE was for the last thirteen years of his life Chief Constructor of the Devonport Dockyard—the title was until recently "Master Shipwright"—and it is worthy of note that he had mainly by his own energy and abilities raised himself from the position of shipwright's apprentice

in the Devonport Dockyard to the highest office in his own branch in the establishment. He joined the Association on the occasion of its visit to Devonport in 1870, acting as one of the vice-presidents; and as a member of the local committee was mainly instrumental in securing access to the training-ship *Cambridge*, where so many interesting experiments in gun and torpedo practice were witnessed by the members of the Association.

Mr. Moore had for some months before his decease been suffering from a complication of diseases; but no danger was apprehended until bronchitis set in, when fatal results speedily ensued. He died at his residence, at the Dockyard Terrace, on the evening of the 1st of April, 1878, at the age of sixty-nine years, leaving a widow and numerous family—six sons and two daughters, one of the former being a surgeon, who attended his father during his last illness.

IX.

JOSEPH PULLIBANK was born at Aveton Gifford, in this county, on August 9th, 1807. He settled at Kingsbridge, where for many years he carried on successfully the business of a builder, and took an important part in all matters affecting the well-being of the place. He was a good speaker, and, as one of the leading members of the Literary and Scientific Institution in Kingsbridge, he did good work in advocating the employment of a high class of lectures for that Institution. On the occasion of the visit of the Association to Kingsbridge last year, although then in failing health, Mr. Pullibank became a member, and took an active part in the arrangements, rendering much assistance to the local committee. He died in November, 1877.

X.

EARL RUSSELL came of a house historically famous and pre-eminently among the "ruling families." Antiquarian tradition carries the ancestry of the Russele, or Rozell, family back to Olaf, King of Rerik, who lived in the sixth century, and who, like his successors, was so remarkable for his shrewdness that he was called the "Sharp-eyed." A more trustworthy record states that one "John Russell" paid fifty marks to King John for "license to marry a great man's daughter." It was in the time of Henry VII. that the house established itself so firmly, that civil wars and revolutions have but seemed to give it additional strength.

John, Earl Russell, the subject of the present notice, was the third son of the sixth Duke of Bedford, by the Hon.

Georgiana Elizabeth, the second daughter of the fourth Viscount Torrington. Lord John was born in London on the 18th August, 1792. He may be said to have been destined to politics as a profession from infancy, and all his training was directed to that end. His after-life bore testimony to the judiciousness of the course pursued. After spending some time at a private school at Sunbury, and having completed his boyish studies at Westminster, he was sent to Edinburgh, and placed under the special care of Professor Dugald Stewart, then the fashionable tutor for the young Whigs of distinction, and so many of whose pupils afterwards attained eminence. In 1809 he started on a foreign tour; and as the whole Continent was then a sealed land to Englishmen, except so much of it as the British army was able to keep for them, it was natural that he should direct his steps to Spain and Portugal, and he landed at Lisbon, which Wellington had lately rescued from the grasp of the invaders. In 1813 he returned to England; and in July of the same year, while still wanting a month to be of age, he was returned for the family borough of Tavistock. Having early gained a seat in the House, he early made himself heard in it, and in the following session he made his first recorded speech, against the treaty which rewarded Bernadotte's defection and punished the vacillation of Denmark by uniting the crowns of Norway and Sweden.

To enumerate all the great questions with which the name of Lord Russell is associated is to epitomize our domestic politics for a period of fifty years; and to trace the various steps by which, through alternating victories and reverses, he achieved his fame in the field of politics would carry us far beyond the limits of a notice such as is suitable to these pages. Suffice it to record but the barest summary of his chief works. In 1819 he introduced his first Reform Bill. In 1868 he made his last important contribution to public affairs, in the shape of a pamphlet on the Church of Ireland. During this long interval his mind was actively engaged on a wide range of ecclesiastical questions, embracing the Test and Corporation Acts, the Jewish Disabilities, the Secularisation of Irish Church Property, the establishment of a Romish Hierarchy in England, the Commutation of Tithes, and the abolition of Church Rates. In politics he was connected first and foremost with Parliamentary Reform, having proposed in his lifetime no less than eight Reform Bills of his own, and having led the attack which proved fatal to the Conservative Reform Bill in 1859. Of the Municipal Corporations Act, a

measure more pregnant with consequences than even the Reform Bill, he took charge in the House of Commons, and when the House of Lords showed a disposition to carry their resistance to extremes, it was Lord John Russell who arranged the necessary compromise. Among social questions he took a deep interest in education, and was long regarded as the leader of the unsectarian party in all schemes of educational reform. To his exertions in 1839 the appointment of the Committee of Privy Council is due; and the Marriage Bill of 1836 was the work of the same hand. Few men, indeed, have ever been the centre of so many great interests, or have led the van of battle in so many momentous controversies.

Entering upon office more than a generation ago, he occupied more important posts than any other minister of his day. Since the time when he entered official life as Paymaster of the Forces in 1830, he held three Secretaryships of State, having ruled at the Home Office, governed our colonies, and administered our foreign relations. He was twice President of the Council, Plenipotentiary Extraordinary, and twice Prime Minister. He sat for Tavistock from 1813 to 1832; he then was elected one of the representatives of South Devon, and retained his seat for that constituency till 1835, when, being rejected, he migrated to Stroud, and represented that borough until 1840; after this he represented the city of London until he was raised to the peerage in 1861.

Through the greater portion of his life, Lord John Russell had only a younger brother's portion. A large portion of his manhood, no doubt, was spent in office, and in the enjoyments of the emoluments of office; but he has himself put it on record, in his evidence given before a committee on salaries, that he never got into debt except when he was in office. His father, it is believed, left him a legacy of £1,000 a year. The late Lady Holland, as a testimony of her esteem for one who had been her and her husband's most trusted friend, left him, for his own life, the rents accruing from her extensive and valuable ground-rents in Brixton. The Queen, as a mark of her royal favour, gave him during his Premiership, and for the term of his natural life, the use of Pembroke Lodge, in Richmond Park, as a country house. This accumulation of gifts, no doubt, rendered him easy in his circumstances, but could hardly be reckoned sufficient groundwork on which to support a peerage and found a new family in the aristocracy. But in the course of 1861 his elder brother, the Duke of Bedford, died. Between the brothers there had always existed a strong bond of mutual affection. The Duke supported Lord

John with all his influence, and Lord John took no step of importance at any time without first consulting the Duke. The next heir, the late Duke, was the only child of his father; he was not married, and not likely to marry. The heir next in succession was a nephew, the son of a brother older than Lord John, who had died several years before. To him the title, and the estates that gave solidity and support to the title, would of right descend. But there was a handsome Irish estate that might be conveniently subtracted from the rest without in any way impoverishing the dukedom; so the Amberley estates were handed over at once, and Lord John became an extensive landowner in his own right. The obstacle that stood in the way of his accepting a peerage was now removed; he was created Earl Russell and Viscount Amberley, and took his seat in the House of Peers.

To the visit of Lord Russell to Spain, which was mentioned above, we may perhaps attribute his lordship's choice of a Spanish subject for one of his early efforts in literature—his tragedy of *Don Carlos*—a work of no great merit, and one which he himself was soon willing should be forgotten. He wrote some other volumes, and edited more, but he would hardly take rank as an author. Among his literary efforts may be mentioned his life of his ancestor, Lord Russell; his *Historical Disquisition on the British Constitution*; and his *Memoirs of Europe from the Peace of Utrecht*. He edited a collection of letters from the archives of his own family, a *Life and Diary of Moore*, and a *Life of Fox*; and in the autumn of 1874 he published, under the name of *Recollections and Suggestions*, a running commentary on his own career. In 1866 he presided at the meeting of the Devonshire Association at Tavistock, and delivered an interesting address to a large and appreciative audience.

The last years of his life were saddened by a grief beyond healing—the premature loss of his eldest son. But for this calamity it might be said that the career of Earl Russell was sunned by fortune to its ending; its shadows were light and passing; its steady and sober radiance was suited to the tastes and traditions of the English people, for whom its forces were spent, and through whom they did their work. At the age of eighty-six, after having enjoyed such a share of power and consideration as rarely falls to the lot of man, and after long service having openly abandoned the militant toils of the arena, Earl Russell passed peacefully away, at Pembroke Lodge, at eleven o'clock on the night of Tuesday, the 28th of May, 1878.

Lord Russell was twice married. By his first wife, widow of Lord Ribblesdale, he had two daughters, one of whom married Mr. Archibald Peel, and the other the Hon. and Rev. H. Montagu Villiers. By his second marriage, with Lady Frances Elliot, daughter of the second Earl of Minto, he had three sons and a daughter. His eldest son, the late Viscount Amberley, married the daughter of the second Lord Stanley of Alderley. Their son, John Francis Stanley, now Earl Russell, is thirteen years of age.

A wish was expressed by the Prime Minister, on behalf of the Cabinet, that the remains of the late Earl should be interred in Westminster Abbey, and that the funeral should partake of a public character befitting the eminent services he had rendered to the State; but in consequence of instructions the Earl had given previous to his decease, this was not acceded to, and the remains were privately consigned to the family vault at Chenies, Hertfordshire.

XI.

JAMES TETLEY, M.D., F.R.C.P., was born at Bradford, in Yorkshire, July 11th, 1810. He was educated at the University of Edinburgh, where he graduated in 1834. His health failing, he was ordered to the south of England; and coming to Torquay, so far recovered as to be able to commence practice about the year 1838, and continued the duties of his profession till within the last two years of his life. By his skill as a physician, by his kindly and gentle manner, he soon won for himself the respect and esteem of all with whom he was brought into contact, and for many years occupied a leading position as a consultant.

Though not taking an active part in public affairs, he was a liberal contributor to many charities; he was consulting physician to the Torbay Infirmary, the Western Hospital for Consumption, and to Erith House, and rendered valuable services in promoting the welfare of these charitable institutions.

Dr. Tetley became a member of the Torquay Natural History Society immediately after it was founded, in 1844, and retained his connection with it till within a short time of his death. He joined the Association in 1864, and three years later became one of its life members.

He died at his residence, Belmont, Torre, on September 18th, 1877, and was interred in the churchyard of Tor, Torquay, his funeral being very largely attended by men of all grades of society, including almost every one of his local medical brethren.

THIRD REPORT OF THE COMMITTEE ON THE METEOROLOGY OF DEVONSHIRE.

THIRD REPORT *of the Committee—Mr. P. F. S. Amery, Mr. H. S. Gill, Mr. E. E. Glyde, Dr. W. C. Lake, Mr. E. Parfitt, Mr. W. Pengelly, Dr. W. T. Radford, and Mr. E. Vivian—for the purpose of making and obtaining observations on a uniform system on the Meteorology of Devonshire.*

Edited by W. C. LAKE, M.D., F.M.S., Honorary Secretary.

(Read at Paignton, July, 1878.)

IN presenting their third report to the Council of the Devonshire Association, the Committee for recording Observations on the Meteorology of Devonshire have to report the discontinuance, after March, 1877, of the observations made by the Rev. T. R. R. Stebbing at Tor Crest Hall, Torquay, that gentleman having left the county, and the accession to the list of observers of Mr. Hearder, of Rocomb, Torquay, a locality closely approximate to Tor Crest Hall; of Mr. Glyde, of Babbacombe; and of Mr. G. Fox, of Kingsbridge. The observations of the Rev. T. R. R. Stebbing, Mr. Hearder, and Mr. Fox not having been continuous through the year, have not however been recorded in the tables attached to this report, nor for the same reason the temperature observations of Mr. Gamlen, of Brampford Speke.

The localities will therefore stand as follows :

Height above Sea-level.	Name of Station.	Name of Observer.	Observations taken of			
			Baro- meter.	Ther- mo- meter.	Hu- midity	Rain- fall.
feet. 1400	Princetown, Dart- moor . . .	Dr. Power . . .	+	+	+	+
650	Holne Vicarage, near Ashburton . .	Rev. J. Gill . .				+
570	Druid, Ashburton .	F. Amery, Esq. .		+	+	+
200	Lamorna, Torquay	W. Pengelly, Esq. .				+
305	Babbacombe . .	E. Glyde, Esq. .	+	+	+	+
*45, 70, & 140	Teignmouth . .	Dr. Lake . . .	+	+	+	+
74	Brookbank, Teign- mouth . . .	G. W. Ormerod, Esq.				+
190	Sidmouth, Sid- mouth . . .	Dr. Radford . .		+	+	+
140	Brampford Speke .	W. H. Gamlen, Esq.				+
230	Exe Villa, Tiverton	H. S. Gill, Esq. .		+		+
451	Langtree Wick, near Torrington . .	Miss Nunes and Miss Bazeley . . .		+	+	+

The Committee have to report with regret the death of one of their number, H. S. Ellis, Esq., of Fair Park House, Exeter.

The most marked features of the meteorology of 1877 were the mildness of the early months of the year, the coldness of its spring, its cool ungenial summer, and the mildness of its fall.

The Committee believe that observations such as those recorded in their reports, derive their chief value from their affording the means of comparing with some exactness the meteorological conditions of the various localities, in regard both to their features of contrast and of similitude. They lament therefore the small number of the localities from which they have obtained observations; but they would point out the following comparisons as worthy of being made even amongst the few stations from which they have been recorded.

The station at Princetown stands by itself, yet the observations taken there may be compared with interest with those taken near Ashburton, in the sub-Dartmoor district, and the next highest locality; and again with the stations on the coast. Those taken at Druid, Ashburton, may be compared with those taken on the coast, some of which are at an altitude not much inferior. The coast stations may also be compared amongst themselves, with their varying altitude

* Observations at Teignmouth, by Dr. Lake: Barometer at West Cliff Terrace; rainfall at Lower Reservoir; other instruments at Bitton.

and situation; those at Babbacombe, high up on the limestone cliffs, with that at Teignmouth, at no great elevation at the mouth of an estuary, and on the New Red Sandstone conglomerate, and both with those at Sidmouth. The two stations on the course of the Exe—Brampford Speke and Tiverton—may be thus compared, and both of them with Langtree Wick. The attempt at such a comparison only shows, though, the richness of the field that might be cultivated, and the small number of the labourers as yet engaged in it. The Committee trust that as the Association meets each year in some different part of the county volunteers may gradually come forward to fill up the gaps thus so painfully revealed. The tables recording the observations made at the various localities will enable the members of the Association to make the comparisons suggested, or any others for themselves; but a short sketch of the results of some of these comparisons may be interesting now.

1. As to Dartmoor.

Mean barometric pressure, corrected for height as well as for temperature, was during each month, except April, higher at Princetown than at Babbacombe and Teignmouth, these being the only stations from which barometric means are recorded.

The mean maximum temperature was lower at Princetown than at any of the other stations for each month, except for October, when it was lower at Langtree Wick than at Princetown. The actually highest temperature reached in any month was also lower at Princetown than at any other station, except in May, when it was lower at Sidmouth; in June, when it was lower at Sidmouth; and in July, when it was lower at Sidmouth and Langtree Wick.

The mean minimum temperature was, as a rule, lower at Princetown than at the other stations; but for July, August, and September this was lower at Tiverton; for October, lower at Tiverton and Langtree Wick; and for December, lower at Tiverton. The lowest minimum temperature actually reached during any month was in January, March, April, May, June, July, and September, lower at Tiverton than at Princetown; in October, lower at Babbacombe, Teignmouth, and Tiverton; and in November and December, lower at Tiverton; while in August this element was higher at Princetown than at any other station, except Druid, Ashburton.

The mean dry bulb temperature was however for each month decidedly lower at Princetown than at any other

station. Mean humidity was also greater at Princetown than at any other station for each month, except in September, when it was greater at Druid, and in November, when it was greater at Druid and at Teignmouth.

2. Comparing together the coast stations.

Notwithstanding the difference of altitude, there was a considerable agreement between the observations at Babbacombe and at Teignmouth. The temperature at Sidmouth, Sidmouth, was usually lower during the summer months, while the shade minimum did not differ materially, nor the shade maximum in winter. The mean minimum temperature at Sidmouth for October was decidedly higher than at the other two coast stations. At these stations the mean maximum shade temperature was highest for each month at Teignmouth; the mean minimum shade temperature was lowest for January at Babbacombe; for February, at Babbacombe and Sidmouth; for March and April, at Babbacombe; for May and June, at Sidmouth; for July and August, at Babbacombe; for September, at Sidmouth; and for October, November, and December, at Babbacombe. In regard to mean humidity at these four stations, the air was driest in January at Sidmouth; in February, at Teignmouth and Sidmouth; in March and April, at Babbacombe and Sidmouth; in May, at Babbacombe; in June, at Babbacombe and Sidmouth; in July, at Teignmouth; in August, at Babbacombe and Sidmouth; in September, at Sidmouth; in October, at Babbacombe and Sidmouth; and in November and December, at Sidmouth.

3. With regard to the other stations.

The excess of maximum shade temperature, both mean and actual, at Exe Villa, Tiverton, from June to October inclusive, is worthy of note, as well as the general lowness of its shade minimum temperature. The same character did not obtain at Langtree Wick, the latter station exhibiting on the whole perhaps less amount of variation of temperature than any other.

Worthy of observation also is the contrast between the temperature at Princetown and that at Druid, Ashburton, in the upland country just below Dartmoor, and the approximation on the whole of the temperature at Druid to that at the stations on the coast. The air at Druid was drier than at any of the coast stations in May; decidedly moister in June, July, August, September, and October.

4. The total rainfall at each locality for the entire year, the number of days on which .01 inch or more fell, and the greatest rainfall on one day, were as follows:

Name of Station.	Total Rainfall.	Number of Wet Days.	Greatest Fall in One Day.
	inches.		inches.
Princetown, Dartmoor . . .	106.82	...	...
Holne Vicarage, near Ashburton . . .	91.18	...	3.16
Druid, Ashburton . . .	67.98	210	2.27
Lamorna, Torquay . . .	42.25	224	1.84
Babbacombe . . .	43.15	216	1.94
Teignmouth . . .	43.59	...	1.78
Brookbank, Teignmouth . . .	42.59	202	2.16
Sidmount, Sidmouth . . .	35.85	202	...
Brampford Speke . . .	39.51	225	1.29
Exe Villa, Tiverton . . .	46.85	222	2.09
Langtree Wick . . .	55.66	233	1.24

(Signed) W. C. LAKE, Hon. Sec. of the Committee.

(Signed) EDWARD PARFITT, Chairman (*pro tem.*)

JANUARY, 1877.

NAME OF STATION.	Nine a.m. BAROMETER.		THERMOMETER IN SHADE.										THERMOMETER IN SUN. Black Bulb in Vacuum.		THERMO- METER ON GRASS.		Nine a.m. WIND.								RAIN.				
	Mean Cor- rected.	No. reduced to Sea Level.	Highest.	Maximum.	Lowest.	Mean of all.	Minimum.	Mean of all.	Maximum.	Mean Humidity.	THERMOMETER IN SHADE.				Mean of all.	Minimum.	Mean of all.	North.	North-east.	East.	South-east.	South.	South-west.	West.	North-west.	Calm.	Total in Month.	Number of Wet Days.	Greatest Fall in one day.
											Mean Dry Bulb.	Mean Wet Bulb.	Mean of all.	Minimum.															
	Inches.	Inches.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Inches.	In.	
Prince Town, Dartmoor	28.373	29.897	49.2	31.0	45.3	36.3	41.0	40.4	95	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	17.46	...	...	
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	17.53	29	2.79	
Druid, Ashburton	...	...	54.0	33.0	50.3	39.0	44.9	44.0	93	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12.95	27	2.14	
Lamorna, Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7.76	29	1.03	
Babbacombe	29.492	29.830	55.7	32.8	50.4	39.6	45.0	43.8	91	114.3	79.2	23.7	31.3	1	3	5	12	6	1	2	7.89	29	1.05	...	...	...	...	...	
Bitton, Teignmouth.	29.795	29.872	56.8	33.0	51.9	40.5	45.8	44.8	93	107.2	80.2	...	...	2	2	1	12	8	4	2	7.78	...	1.09	...	...	...	...	...	
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7.56	29	1.14	
Sidmouth, Sidmouth	...	...	54.5	32.0	50.5	40.4	...	...	86	99.0	...	...	...	2	2	4	2	10	4	7	...	...	...	...	...	5.49	26	...	
Brampford Speke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5.62	27	1.13
Exe Villa, Tiverton	...	...	55.0	28.0	50.0	37.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.40	28	0.92
Langtree Wick.	...	...	53.1	33.0	48.6	39.1	43.9	42.7	90	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.83	29	0.97

FEBRUARY, 1877.

Prince Town, Dartmoor	28.546	30.085	49.6	26.0	44.5	36.7	40.5	39.7	94	...	...	...	20.0	31.3	...	...	...	...	...	...	...	...	...	6.86	...	...
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4.16	25	0.93
Druid, Ashburton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.90	21	0.52
Lamorna, Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.63	20	0.29
Babbacombe	29.602	30.030	57.3	28.0	51.5	41.3	46.5	44.2	83	...	113.9	97.4	20.4	34.0	2	1	8	11	6	...	...	...	...	1.61	18	0.26
Bitton, Teignmouth.	29.948	30.025	59.0	30.0	52.7	42.6	47.3	44.4	80	...	114.0	97.0	21.8	34.6	1	...	...	...	...	...	...	...	...	1.22	...	0.27
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.09	13	0.24
Sidmouth, Sidmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.22	19	...
Brampford Speke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.02	21	0.50
Exe Villa, Tiverton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.73	22	0.49
Langtree Wick.	...	...	52.8	31.0	47.8	39.7	45.0	43.3	87	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4.07	24	0.77

MARCH, 1877.

NAME OF STATION.	Nine a.m. Barometre.		Thermometer in Shade.										Thermometer in Sun. Black Bulb in Veget.		Nine a.m. Wind.								Rain.	
	Mean Cor- rected.	Inches. to Sea Level.	Highest	Lowest	Mean of all	Mean Dry	Mean Wet	Mean Humidity.	Highest	Mean of all	North-east.	North.	East.	South-east.	South.	South-west.	West.	North-west.	Calm.	Total in Month.	Number of Wet Days.	Greatest Fall in one day.		
			Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	
Prince Town, Dartmoor	28.332	29.867	50.6	24.2	43.0	32.8	38.1	37.1	91	...	...	...	...	...	...	...	...	...	...	5.14	23	...		
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4.09	20	1.67		
Druid, Ashburton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.21	18	1.11		
Lamorna, Torquay	...	...	61.0	28.0	50.3	35.9	44.3	41.7	79	...	...	...	...	...	...	...	...	...	...	2.61	24	0.72		
Babacombe	29.473	29.810	61.1	25.2	50.0	36.8	44.6	41.6	78	129.2	104.1	19.3	29.5	5	2	1	2	4	9	4	2.67	22	0.70	
Bitton, Teignmouth.	29.718	29.795	61.8	26.0	51.2	37.3	44.9	42.4	80	128.0	104.8	19.2	29.8	3	2	1	4	8	7	2	2.92	...	0.93	
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.82	20	0.91		
Sidmouth, Sidmouth	...	...	57.0	27.0	48.2	37.2	...	...	78	115	0	...	13.8	3	3	4	2	4	6	9	...	...	...	
Bramford Speke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.30	22	1.10		
Exe Villa, Tiverton	...	...	59.0	24.0	50.0	34.0	...	...	...	...	...	...	...	...	...	...	...	...	...	3.25	20	1.15		
Langtree Wick	...	...	52.6	26.7	46.4	36.3	42.2	40.4	86	...	...	...	...	...	...	...	...	...	...	4.59	25	0.84		

APRIL, 1877.

Prince Town, Dartmoor	...	28.269	29.689	53.6	31.0	46.7	36.4	42.6	41.4	91	...	...	...	...	...	...	...	...	...	...	9.37	...	...	...
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9.00	20	3.16	...
Druid, Ashburton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.87	17	2.07	...
Lamorna, Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5.72	19	1.84	...
Babacombe	...	29.395	29.729	64.1	35.0	52.2	41.9	47.2	45.2	85	129.0	102.7	23.9	35.9	1	7	6	5	3	3	5.80	19	1.94	...
Bitton, Teignmouth	...	29.621	29.698	64.8	33.3	53.2	43.0	47.7	46.0	88	125.0	104.1	27.2	37.5	...	7	10	2	1	3	6.12	...	1.78	...
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.42	18	2.16	...
Sidmouth, Sidmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5.74	19	...	...
Bramford Speke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.49	20	2.62	...
Exe Villa, Tiverton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.24	20	2.09	...
Langtree Wick	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4.06	15	1.01	...

MAY, 1877.

NAME OF STATION.	Nine a.m. BAROMETR.		THERMOMETER IN SHADE.										THERMOMETER IN SUN. Black Bulb in Vacuo.		THERMO- METER OF GRASS.		WIND.							RAIN.						
	Mean Cor- rected.	No. reduced to Sea Level.	Highest.	Maximum.	Lowest.	Minimum.	Mean of all.	Maximum.	Mean of all.	Humidity.	THERMOMETER IN SHADE.							Mean of all.	Minimum.	North.	North-east.	East.	South-east.	South.	South-west.	North-west.	Calm.	Total in Month.	Number of Wet Days.	Greatest Fall in one day.
											Mean of all.	Maximum.	Minimum.	Mean of all.	Maximum.	Minimum.	Mean of all.														Maximum.	Minimum.	Mean of all.	Maximum.	Minimum.
	Inches.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.
Prince Town, Dartmoor	28.339	29.954	60.2	27.4	50.6	38.4	45.5	43.5	85	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7.58	...	...		
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7.44	18	1.77		
Druid, Ashburton	...	...	64.0	31.0	56.4	42.0	50.6	46.6	74	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5.95	18	1.50		
Lamorna, Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.07	20	0.65		
Babbacombe	29.557	29.891	63.6	36.3	56.1	43.5	50.4	46.7	76	134.1	116.9	27.1	37.2	3	8	7	2	1	5	4	1	...	...	...	3.28	19	0.72			
Bitton, Teignmouth	29.868	29.885	63.2	33.6	56.6	43.8	51.2	47.7	77	129.1	114.2	26.7	37.6	3	4	8	3	7	2	2	2	...	...	...	4.05	...	...	0.80		
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4.01	18	0.79		
Sidmouth, Sidmouth	...	...	60.1	32.0	54.5	42.5	...	...	...	...	80	124.0	...	...	...	...	...	...	...	...	...	...	...	...	...	2.69	17	...		
Brampford Speke	...	...	66.0	27.0	54.5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.85	15	0.73		
Exe Villa, Tiverton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.42	16	0.72		
Langtree Wick	...	...	...	...	54.5	42.2	49.8	46.4	77	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.63	13	0.87		

JUNE, 1877.

Prince Town, Dartmoor	28.573	30.104	75.6	41.6	62.1	48.1	54.4	53.9	97	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Druid, Ashburton	...	...	75.0	44.0	67.1	52.1	60.4	57.4	82	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lamorna, Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Babbacombe	29.685	30.012	76.0	44.6	65.9	52.3	60.0	55.9	77	139.0	123.2	37.1	46.7	...	7	7	3	1	6	4	2	...	...	1.24	11	0.36
Bitton, Teignmouth	29.913	29.989	76.0	45.0	66.8	53.1	60.3	56.7	78	140.7	122.3	36.8	48.6	1	4	9	3	2	9	...	1	1	1.37	...	0.43	
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.38	11	0.42
Sidmouth, Sidmouth	...	...	74.6	44.5	64.5	51.7	...	...	77	131.5	...	...	...	...	3	1	4	3	7	4	2	4	...	1.14	9	...
Brampford Speke	...	...	82.0	39.0	70.0	49.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.96	9	0.34
Exe Villa, Tiverton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.83	9	0.22
Langtree Wick	...	...	76.7	46.1	65.4	52.1	60.2	56.1	76	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.57	11	0.42

JULY, 1877.

NAME OF STATION.	Nine a.m. Barometer.		Thermometer in Shade.								Thermometer in Sun. Black Bulb in Vacuo.		Thermo- meter of Globe.		Wind.								Rain.	
	Mean Cor- rected.	Inches. reduced to Sea Level.	Highest.	Lowest.	Mean of all.	Mean of all.	Mean of all.	Mean of all.	Mean of all.	Mean of all.	Mean of all.	Mean of all.	North.	North-east.	South.	South-west.	West.	North-west.	Calin.	Told in Month.	Number of Wet Days.	Greatest Fall in one day.		
Prince Town, Dartmoor	28.544	30.035	74.2	42.6	59.9	48.2	55.3	53.0	86	...	...	...	...	...	...	...	...	...	...	10.07	...	...		
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.09	15	1.69		
Druid, Ashburton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4.09	11	1.20		
Lamorna, Torquay	...	...	76.0	44.0	67.0	51.2	60.7	57.8	84	...	...	...	...	...	1	5	12	9	2	...	...	...		
Babbacombe	29.647	29.973	77.9	44.0	66.8	51.8	61.1	56.8	76	139.0	125.2	34.8	45.6	...	2	8	9	5	1	2.43	12	0.69		
Bitton, Teignmouth	29.882	29.958	78.5	45.2	68.0	52.7	60.9	56.5	75	132.7	121.6	35.8	46.7	...	4	2	...	...	...	2.25	...	0.90		
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	18	3	7	1	2.25	...	0.91		
Sidmouth, Sidmouth	...	...	73.0	43.0	64.6	51.9	...	...	78	132.0	...	35.0	...	...	3	5	6	17	...	2.46	14	...		
Brampford Speke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.31	14	0.84		
Exe Villa, Tiverton	...	...	80.0	39.0	69.0	48.0	...	...	...	...	...	...	...	...	...	...	...	...	...	3.93	13	0.86		
Langtree Wick.	...	...	73.5	46.2	62.8	52.1	59.0	55.7	80	...	...	...	...	...	...	...	...	...	...	5.72	17	1.24		

AUGUST, 1877.

Prince Town, Dartmoor	28.470	30.009	64.2	47.0	60.7	50.3	56.5	54.5	87	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Druid, Ashburton	...	...	72.0	48.0	67.8	52.2	61.7	59.3	84	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lamorna, Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Babbacombe	29.570	29.896	72.8	41.6	66.5	54.3	61.6	58.0	79	139.2	124.2	33.6	48.0	...	...	...	...	...	...	...	...	...	...	...
Bitton, Teignmouth	29.787	29.863	71.8	41.2	67.0	55.4	62.0	58.9	81	131.9	123.2	34.2	50.3	...	...	...	...	...	...	...	...	...	...	...
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sidmouth, Sidmouth	...	...	69.0	41.5	65.3	54.7	...	...	79	132.0	...	29.0	...	...	...	...	...	...	...	...	...	...	...	...
Brampford Speke	...	...	80.0	35.0	68.0	48.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Exe Villa, Tiverton	...	...	70.7	43.7	64.3	53.8	60.0	57.5	85	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Langtree Wick.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

SEPTEMBER, 1877.

NAME OF STATION.	Nine a.m.		THERMOMETER IN SHADE.						THERMOMETER IN SUN.		THERMO- METER ON GRASS.		WIND.						RAIZ.	
	Mean Cor- rected.	Nine a.m. Barometer.	THERMOMETER IN SHADE.						THERMOMETER IN SUN.		THERMO- METER ON GRASS.		WIND.						Number of Days.	Rain.
			Mean of all.	Lowest.	Minimum.	Mean of all.	Mean Wet.	Mean Dry.	Mean of all.	Mean of all.	Mean of all.	Mean of all.	North.	East.	South-east.	South.	South-west.	West.	North-west.	
	Inches.	Inches.	High- est.	Lowest.	Minimum.	Mean of all.	Mean Wet.	Mean Dry.	Mean of all.	High- est.	Lowest.	Minimum.	North.	East.	South-east.	South.	South-west.	West.	North-west.	Inches.
Prince Town, Dartmoor	28.638	30.135	62.0	36.0	56.2	44.3	51.2	49.1	85	...	...	...	...	...	...	...	...	...	...	4.50
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4.13
Druid, Ashburton	...	...	...	...	...	...	...	...	...	...	...	...	4	1	4	...	...	...	...	3.08
Lamorna, Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.25
Babbacombe	29.760	30.090	67.8	40.0	66.7	48.9	55.8	52.6	80	129.2	113.0	33.2	43.1	3	9	4	1	4	2	6
Bitton, Teignmouth	30.006	30.082	70.0	40.5	63.3	49.0	57.2	54.0	80	133.2	115.8	32.9	42.3	2	9	2	1	6	4	2
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.41
Sidmouth, Sidmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.36
Brampford Speke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.42
Exe Villa, Tiverton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.77
Langtree Wick	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.85
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.93

OCTOBER, 1877.

Prince Town, Dartmoor	28.445	30.116	60.2	32.0	52.5	40.9	48.3	46.7	89	...	...	...	...	...	...	...	...	...	...	8.48
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7.85
Druid, Ashburton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5.49
Lamorna, Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.59
Babbacombe	29.721	30.052	65.3	31.3	58.3	44.8	52.8	49.8	81	125.1	105.4	25.3	36.6	3	4	2	1	4	8	1
Bitton, Teignmouth	29.567	29.623	65.6	31.0	59.6	45.2	52.6	50.0	82	125.6	106.3	23.2	36.5	2	3	1	2	1	13	7
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.41
Sidmouth, Sidmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.15
Brampford Speke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.75
Exe Villa, Tiverton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.68
Langtree Wick	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.63
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.46

NOVEMBER, 1877.

NAME OF STATION.	Nine a.m. BAROMETER.		THERMOMETER IN SHADE.										THERMOMETER IN SUN. Black Bulb in Vacuo.		Nine a.m. WIND.								RAIN.	
	Mean Cor. Inches.	Inches reduced to Sea Level.	Highest Maximum.	Lowest Minimum.	Mean of all Maximum.	Mean of all Minimum.	Mean of all Maximum.	Mean of all Minimum.	Mean Humidity.	Mean Wet Bulb.	Mean Dry Bulb.	Mean of all Maximum.	Mean of all Minimum.	North-east.	East.	South-east.	South.	South-west.	North-west.	Calm.	Total in Month.	Number of Wet Days.	Greatest Fall in one day.	
																								Deg.
	Inches.	Inches.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Inches.	In.	
Princes Town, Dartmoor	28.251	29.789	52.6	31.5	47.9	37.8	43.3	42.2	91	...	...	...	...	...	...	...	...	...	...	...	15.80	...	...	
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14.48	25	2.69	
Druid, Ashburton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11.02	24	2.27	
Lamorna, Torquay	...	...	61.0	33.0	53.6	41.3	47.4	46.4	93	...	...	...	...	...	...	...	...	...	...	...	7.45	25	1.32	
Babbacombe	29.396	29.731	60.0	34.6	53.7	41.3	47.4	45.7	88	117.4	91.7	26.8	34.6	...	...	...	...	...	...	...	7.54	25	1.25	
Bitton, Teignmouth.	29.645	29.722	61.0	35.2	54.8	42.3	47.5	46.3	92	118.6	93.9	24.0	34.2	2	...	...	...	...	...	...	6.84	...	1.21	
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.80	25	1.37	
Sidmouth, Sidmouth	...	...	58.0	34.0	53.2	42.2	...	...	87	107.0	...	28.0	...	...	...	...	...	...	...	...	5.92	25	...	
Bramford Speke	...	...	59.0	29.0	53.0	38.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.13	25	1.29	
Exe Villa, Tiverton	...	...	56.9	34.5	50.9	41.6	45.4	44.2	...	...	...	...	...	...	...	...	...	...	...	...	7.32	25	1.36	
Langtree Wick.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8.40	26	1.22	

DECEMBER, 1877.

Prince Town, Dartmoor	28.614	30.165	49.6	29.0	43.2	35.1	38.8	38.2	95	...	...	...	...	...	...	...	...	...	...	...	...	4.99	...	...
Holne Vicarage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4.61	19	1.04
Druid, Ashburton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.13	18	0.75
Lamorna, Torquay	...	...	57.0	31.0	49.0	38.0	43.2	40.6	87	...	...	...	...	...	4	2	2	...	...	...	...	1.6	17	0.37
Babbacombe	29.752	30.086	53.9	30.9	48.1	38.1	42.2	40.9	89	96.0	77.4	21.0	30.6	2	3	1	2	8	12	3	...	1.80	19	0.46
Bitton, Teignmouth	30.016	30.094	55.3	30.2	49.9	38.6	42.6	41.4	90	102.5	80.7	21.4	30.8	2	3	1	4	12	7	2	...	2.13	...	0.60
Brookbank, Teignmouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.63	16	0.53
Sidmouth, Sidmouth	...	...	55.6	30.0	48.0	38.7	...	...	87	103.0	...	25.0	...	...	1	1	4	5	13	...	1.56	16	...	
Bramford Speke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.16	22	0.45
Exe Villa, Tiverton	...	...	53.0	25.0	48.0	34.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.99	19	0.68
Langtree Wick	...	...	51.7	31.7	46.7	38.2	42.4	41.4	92	...	...	...	...	...	...	...	...	...	...	...	...	4.10	23	0.75

THIRD REPORT OF THE COMMITTEE ON SCIENTIFIC MEMORANDA.

THIRD REPORT of the Committee—consisting of Mr. G. Doe, Rev. W. Harpley, Mr. N. S. Heineken, Mr. H. S. Gill, Mr. R. J. King, Mr. E. Parfitt, Mr. W. Pengelly, Mr. J. B. Rowe—for the purpose of noting the discovery or occurrence of such facts, in any department of scientific inquiry, and connected with Devonshire, as it may be desirable to place on permanent record, but may not be of sufficient importance in themselves to form the subjects of separate papers.

Edited by W. PENGELLY, F.R.S., F.G.S., &c., Hon. Secretary of the Committee.

(Read at Paignton, July, 1878.)

THIS REPORT includes *Memoranda* of facts discovered or observed up to the end of May, 1878.

The portions of the Report which are not placed within inverted commas are editorial. The sources whence all the other portions have been derived are either fully stated, or are indicated by initials, the full import of which is as follows:—

P. F. S. A.	=	Mr. P. F. S. Amery, Druid, Ashburton.
W. B.	=	Mr. W. Ball, jun., Torquay.
H. S. G.	=	Mr. H. S. Gill, Exe Villa, Tiverton.
W. G.	=	Mr. W. Gasking, Babbacombe.
A. C. L. G. G.	=	Dr. A. C. L. G. Günther, British Museum.
N. S. H.	=	Mr. N. S. Heineken, Sidmouth.
J. S. J.	=	Mr. J. S. James, Plymouth.
W. C. L.	=	Dr. W. C. Lake, West Cliff Terrace, Teignmouth.
W. P.	=	Mr. W. Pengelly, Lamorna, Torquay.
J. S.	=	Mr. John Stiggins, Babbacombe.
T. T.	=	<i>Torquay Times</i> (Torquay Newspaper).

- W. M. N.* = *Western Morning News* (Plymouth Newspaper).
W. T. = *Western Times* (Exeter Newspaper).
G. P. W. = Mr. G. P. Wilson, Strand, Torquay.
R. R. W. = Rev. Preb. Wolfe, Arthington, Torquay.

The Memoranda have been arranged under separate *Heads*, in alphabetical order, and preceded by Roman numerals. Where necessary each Head has been divided into *Sub-heads*, numbered in Arabic numerals; these have, in some cases, been subdivided into *Topics*, each preceded by a Roman capital letter; and, finally, certain Topics have been subdivided into *Memoranda*, each preceded by a small italic letter.

It must be needless to say that each of the writers is alone responsible for the statements he makes; and that the object of the Committee in their Reports is to record facts, not to speculate on their explanations, or bearings, or connections.

I. ARCHÆOLOGICAL.

(1) "A thumb flint, or scraper, was found in Cottington Garden, Sidmouth, in 1878. (N. S. H.)"

(2) "A flint flake, blanché, was found by Mr. H. Ede, on Sidmouth beach, in January, 1878. (N. S. H.)"

(3) "An implement of grey flint or chert was found by Mr. H. Ede, on the surface of the ground of the New Cemetery, Sidmouth, on 30th May, 1878, and is now the property of Mr. P. O. Hutchinson. (N. S. H.)"

Mr. Hutchinson has been so good as to favour me with charmingly executed sketches of two aspects of this fine tool, which leave little or no doubt of its being a Palæolithic tool. The sketches indicate an implement 5·2 inches long, and 2·4 inches in greatest breadth.

(4) "On 16th July, 1877, a Torquay cab driver, named Clark, brought me an antique razor, stating that he bought it, a few days before, of a labouring man, working near Smoky House, in the parish of Marldon, South Devon, who found it, as he stated, a few days before whilst at work in an adjacent field. The soil in the grooves of the handle, and the marks of recent friction on the blade, are precisely as when I received the razor from Clark.

"Mr. A. W. Franks, keeper of the British and Mediæval Antiquities, and of the Ethnographical Collections at the British Museum, to whom I forwarded it, says 'It seems to belong to the first half of the 18th century. Is it a farmer's razor?'"

"The article belongs to my private collection. (W. P.)"

(5) "On 26th January, 1878, Edward Soper, foreman of the excavators employed on the Torquay Sewerage Works, near Torre Abbey, brought me a dagger handle, stating that it was found 8 feet below the surface, lying *on*, not *in*, the bed of peat which, as is well known, underlies the soil in, at least, the greater part of that low-lying district; and that it was met with in 1877, near the 'Spanish Barn,' about 1 foot from a large bone.

"Mr. A. W. Franks says, 'The dagger handle looks old from the pattern on it, but is probably of the 14th century.'

"The specimen, as well as the bone found near it, belongs to my private collection. (W. P.)"

(6) See IV. D.

II. ICHTHYOLOGICAL.

(1) *A Devonshire Pompilus*.:—In June, 1877, Mr. William Gasking, of Babbacombe, near Torquay, presented to the Torquay Natural History Society a specimen of *Pompilus* = Blackfish = *Coryphaena pompilus*, Lin., and gave me the following statement respecting it:—"The fish was taken by William Gasking, of the Cary Arms, Babbacombe, on 14th June, 1877, in a seine, about a stone's throw from the Cary Arms, with about 900 mackerel and a fine specimen of the Lesser Sun-Fish = *Tetraodon mola*, Lin. It has been submitted to Mr. P. H. Gosse, F.R.S., by whom it was identified. (W. G.)"

So far as I am aware there is no record of the species having been previously taken on the coasts of this county, nor is it included in Mr. Parfitt's *Ichthyic Fauna of Devon*. (See *Trans. Devon. Assoc.*, vol. vii. pp. 106-149, 1875.) Nevertheless, it is not quite a stranger to British waters. (See Couch's *History of the Fishes of the British Islands*, vol. ii. pp. 123-6.)

The Babbacombe specimen, now in the Museum of the Torquay Natural History Society, is shorter than any of those described by Mr. Couch.

(2) *Hermaphrodite Herrings*:—On Saturday, 3rd February, 1878, Mr. John Stiggins, of Babbacombe, took to the rooms of the Torquay Natural History Society a large portion of a herring (= *Clupea harengus*, Lin.), which had been cooked and partially eaten; and he gave me the following information respecting it:—"On Saturday, 26th January, 1878, Mr. Thomas Stiggins, my brother, fisherman of Babbacombe, took, in a moored or anchored net in Babbacombe Bay, about 200 herrings, all meshed. One of them, on being cooked on the following Monday, was found by the person who was eating it to have two roes—one hard, the other soft. Before it was taken to the Museum it was shown to Mr. P. H. Gosse, the well-known marine zoologist. (J. S.)"

Mr. A. C. L. G. Günther, F.R.S., &c., Keeper of the Zoological Collections in the British Museum, writing me on the subject, on 4th February, 1878, says "Hermaphrodite herrings are not common; yet they cannot be called uncommon, as nearly every year an instance is recorded. (A. C. L. G. G.)"

The specimen is now in the collection of the Torquay Natural History Society.

(3) *Fifteen-Spined Stickleback*:—On 11th February, 1878, Mr. William Ball, jun., of Torquay, took to the rooms of the Torquay Natural History Society a specimen of the Fifteen-Spined Stickleback = Sea Adder = *Aculeatus marinus major*, Jonston, carefully preserved in spirits, and with it the following memorandum:—"The specimen was found in a badly-caulked butt in the ship *Lizzy Fox*, of Torquay. The ship had been leaking for five or six days previously, but after lying one day in Torquay harbour the leak stopped. On examining the vessel at low water, on 4th February, it was found that the hole in her side had been effectually filled by this fish, which had probably passed within a short distance of the hole, and been drawn into it by the suction. (W. B.)"

The specimen now forms part of the Torquay Natural History Society's collection.

The species is well known to belong to our Devonshire ichthyic fauna, and is included in Mr. Parfitt's list. (*Trans. Devon. Assoc.*, vol. vii., p. 136.)

Without commenting on Mr. Ball's hypothesis of the specimen having been drawn into the hole by "suction," it may not be out of place to remark that Mr. Couch says of the species, "It has drawn to itself special notice from its having been discovered to be in the habit of forming a nest for the securing of its young. . . . The places selected for

these nests are usually in harbours or some recess near the open sea, where, with the presence of the pure water of the ocean, there is shelter from the open violence of the waves." (*History of the Fishes of the British Islands*. By Jonathan Couch, F.L.S. Vol. i., pp. 180-1.)

III. MAMMALIAN.

(1) *Canine* :—

The *Western Morning News* for 21st January, 1878, furnished the following cutting :—"A Scotch collie, belonging to Mr. James, coal merchant, of the Great Western Docks [Plymouth], was taken on a voyage to the North in a collier several months ago, and accidentally lost at Sunderland. One day this week the dog quietly walked into Mr. James's office, and, without recognizing any of the clerks, lay down before the fire. When Mr. James returned he was amazed to see his old and faithful friend, and calling the animal by name was immediately overwhelmed by caresses. How it has found its way back from so far North no one seems to have any idea. (*W. M. N.*)"

Mr. James, who was so good as to write me on the subject on 30th January, 1878, says, "The dog was lost, by the captain of one of my vessels, in Sunderland, about twenty months ago; and on the 14th of *this* month she walked into my office, where she is now lying before the fire. This is *all* I know about the case at present. (*J. S. J.*)"

(2) *Equine* :—

The following paragraph appeared in the *Western Times* of 22nd January, 1878 :—

"*A Real Hunter*.—On Monday [21st January] Mr. William Turner's harriers were out in the neighbourhood of Westward Ho! and pursued a hare across the Burrows to the Sand Hills. Being cruelly pressed puss took to the water just off the Lifeboat-house. Mr. James Chapple being close on to the hare at the time, jumped off his horse hoping to catch it, but not wishing to go far into the water, desisted. Not so the pony he was riding, which plunged gallantly in and for a while kept in sight of the hare. It will give those who know the coast an idea of what the pony did when we inform them she was ultimately captured by the Preventive men in one of their boats abreast of the Fairway or Bell Buoy, and was towed into Braunton Sands very little, if anything, the worse for its swim. (*W. T.*)"

Mr. Chapple, to whom I wrote on the question, has been

so good as to inform me that the statement is perfectly correct, that the pony was 1 hour and 20 minutes in the water, and that his swim was about 3 miles.

IV. METEOROLOGICAL.

(1) *Tempest of 14th-15th October, 1877*:—On the night of Sunday-Monday, 14th-15th October, 1877, a storm visited Devonshire, and, at least, the south-western counties generally, of so violent and destructive a character as to entitle it, perhaps, to a place amongst these memoranda. According to the *Western Morning News* of 16th October, throughout the whole of Saturday, the 13th, the barometer at Plymouth had a downward tendency, and on the following day the descent was very rapid. On Sunday afternoon there was high wind from S.S.E., which steadily increased as night came on, and veered round to S.S.W., then to S.W.; and between these two latter points, from about 11 p.m. to after 3 on Monday morning, it blew with a force that it is believed has not been equalled within the last quarter of a century.

According to reports in the same paper the direction of the wind was not quite the same on the northern coasts of the county. At Ilfracombe it was from the south on Sunday afternoon; about 9 p.m. it shifted to S.W., and increased in force until midnight, when it chopped round to N.W., and blew a furious gale.

No part of the county appears to have escaped unharmed, as the following list of damages sustained will show.

(A) *General destructive effects of the storm*:—

(a) "*Appledore*:—Two vessels were driven from their moorings on to the Sprat Ridge Sands. (*W. M. N.*)"

(b) "*Ashburton*:—After the gale the town looked much as if it had been laid siege to with heavy artillery. Along the Dart great numbers of trees had fallen. (*W. M. N.*)"

(b') Mr. P. F. S. Amery, writing me on 28th October, 1877, said, "Such damage was done here [Ashburton] by the storm the other day that a farmer told me that in one night more thatch was blown off in Widecombe parish than Ashburton, Buckland, and Widecombe could produce in one season. (*P. F. S. A.*)"

(c) "*Axminster*:—Thatched houses fared the worst, and many of them were stripped; hay and corn ricks shared the same fate; and several trees were uprooted. (*W. T.*)"

(d) "*Barnstaple* :—A wooden shed was blown down at one of the railway stations, and the zinc covering over the platform of one of them was torn off. Two fine trees were prostrated in the North Walk; and an immense amount of damage has been done to the roofs of houses. (*W. M. N.*)"

(e) "*Bideford* :—At the Globe Inn a high chimney fell, crashing through the roof and floor; numerous houses in Meddon Street were completely stripped; and in the Hartland Road large trees were rooted up. (*W. M. N.*)"

(f) "*Bigbury Bay* :—The Spanish schooner *Yves*, No. 2, was wrecked at Challaboro. All hands were saved except the captain. (*W. M. N.*)"

(g) "*Blackawton* :—Nearly every roof suffered; the people were afraid to remain in their houses; and a large barn belonging to Mr. Foale was demolished. (*W. M. N.*)"

(h) "*Bovey Tracey* :—Trees were rooted up; corn ricks and chimney pots gave way; and sheds in exposed situations were entirely stripped. (*W. M. N.*)"

(i) "*Brixham* :—Almost every house suffered loss of some kind; one or two were unroofed, and one lost the stack of chimneys. Lower Brixham Church sustained considerable damage. The *William Burnand*, a sloop, broke adrift in the harbour, and ran ashore at the back of King's Quay. Numerous trees were uprooted, one farmer lost seven elms and five apple trees. (*W. M. N.*)"

(j) "*Crediton* :—Labourers' cottages were in many instances unroofed; a great many apple trees were blown up or snapped off at their stools; and a large elm in a hedge adjoining the People's Park was torn up bodily. The grounds of Creedy, Downes, Newcombes Park, and Crass, lost many fine trees; the limb of an elm fell on a bullock at Cheriton Fitzpaine, and killed it; and traffic on the turnpike road from Crediton to Newton St. Cyres was impeded several hours by fallen trees. (*W. M. N.*)"

(k) "*Cullompton* :—A chimney at the Devon and Cornwall Bank fell through the roof; and a large number of trees were uprooted, one of which fell on a horse and killed it. (*W. T.*)"

(l) "*Dartmouth* :—The steamer *Newcomin* drifted from her moorings, and was stranded in the Ballast Cove; much damage was done to houses, especially in the south part of the town, where scarcely one escaped injury; ricks of corn were completely blown away in the neighbourhood, and numerous trees were prostrated. (*W. M. N.*)"

(m) "*Dawlish* :—Trees were blown down, and several houses sustained damage. (*W. M. N.*)"

(n) "*Devonport* :—Houses were injured in all parts of the town, and great damage was done to numerous roofs in the Dockyard. The Dock No. 3, which was being enlarged by Mr. Pethick, was so much damaged that the loss is estimated at £5,000. The iron drill-shed at Trevol, erected but two years since, was entirely blown away, entailing a loss of £1,000. In the Gun Wharf two trees were blown down. A chimney at 47, George Street, fell with the roof, and buried an inmate, but without causing fatal injuries. The *Ullage*, yacht, 39 tons, was driven against the Dock No. 2, and sank at once. The *Tamar*, schooner, 77 tons, drifted against the sea wall at Keyham Yard, where she sank. The *General Peel* broke from her moorings and drifted ashore at New Passage, taking the ground on the chains by which the steam ferry 'bridge' plying to Torpoint is worked, so that the traffic had to be carried on by means of boats. (*W. M. N.*)"

(o) "*Exeter* :—Long pieces of wall were blown down; a chimney fell on an adjacent house in High Street, but did no further damage than breaking through the slates and plastering; and several other chimneys fell in various parts of the city. At Pinhoe, about 2·5 miles N.E. from Exeter, a rather tall chimney fell through the roof of a house and killed Miss Ann Bambury, one of the inmates. (*W. M. N.*)"

(o) "Great Elms were uprooted or snapped in two; at West View Terrace, at the end of Bartholomew Yard, a back tenement was blown clean away; in Centre Street the chimney of a bakery fell on the roof of an adjoining house and smashed it in; the tents erected at the back of the Hospital for the shelter of the patients when out for exercise, were destroyed; a falling tree cut off the end of the house known as The Shrubbery, Barnfield, and, by the shock, broke every pane of glass in the house; several roofs of houses were blown off, and the inmates had to seek shelter elsewhere; a wall at the back of a nursery was blown down, as

was another at the bottom of Summerland Crescent; the roof of a house in Bellair Place, Mount Radford, was lifted from its bearings, and the ceiling of one of the bedrooms was so smashed as partly to bury the occupants; and a large stack of chimneys at 6, Park Place, fell into the garden. At Alphington nearly all the thatched roofs were blown away, some haystacks were overturned, and the walls at the back of two new houses near the Alphington Road were blown down. (*W. T.*)”

(*p*) “*Exmouth*:—An end wall and a stack of chimneys nearly 60 feet high, part of a house recently erected in Morton Crescent, were completely blown down; a chimney from the Assembly Room was blown over on the adjoining house, and went right through to the ground floor; another chimney fell through the roof of a house in Waterloo Place; a wall at the end of the Parade was blown down; and almost every house in the town suffered somewhat considerably. (*W. M. N.*)”

(*p'*) “The roads were blocked with fallen trees, and four boats were sunk. (*W. T.*)”

(*q*) “*Horrabridge*:—In the neighbourhood of Horrabridge, Maristow, and Meavy several immense trees were uprooted and hurled a considerable distance; several roofs and chimneys were blown away; and many barns were completely demolished. (*W. M. N.*)”

(*r*) “*Ilfracombe*:—Trees were blown down, and stacks of hay and corn were scattered broadcast. (*W. M. N.*)”

(*r'*) “About half the roof of the Railway Station was blown off; and a chimney which fell on a tobacconist's roof went right through into the shop. (*W. T.*)”

(*s*) “*Ivybridge*:—Much damage was done to roofs of houses; hay and corn ricks were entirely swept away; and numerous trees, including a very large beech, were blown down. (*W. M. N.*)”

(*t*) “*Kingsbridge*:—There was scarcely a house in the town that had not its roof injured; and throughout the district corn stacks were blown down and scattered in all directions. (*W. M. N.*)”

(*u*) “*Loddiswell*:—Suffered severely. (*W. M. N.*)”

(v) "*Lydford*:—Houses were unroofed; chimney-tops were blown about; stacks of hay and corn were overturned; and large trees were rooted up. (*W. M. N.*)"

(w) "*Marlborough*:—Several houses were partially unroofed. (*W. M. N.*)"

(x) "*Modbury*:—The gale was felt severely; trees were uprooted; roofs were blown off; and windows with their shutters were broken. (*W. M. N.*)"

(y) "*Newton Abbot*:—Great damage was done to house property in Queen Street. The lead was stripped off one roof, carried across the street and over houses on the opposite side. (*W. M. N.*)"

(y) "In the South Devon Cricket Ground, two large trees were blown down, and another snapped in two; the adjacent village of Highweek suffered considerably—houses being partially unroofed, chimneys blown down, and trees uprooted in all directions; and the trees at Bradley and at Sandford Orleigh shared a similar fate. The neighbouring villages of Kingsteignton, Denbury, Ogwell, Kingskerswill, and Teigngrace were also roughly visited. (*W. T.*)"

(z) "*Newton St. Cyres*:—A large tree fell on a house, and, after smashing the roof, entered a bedroom. (*W. T.*)"

(a*) "*North Tawton*:—Ricks were overturned; a couple of trees fell and smashed the Rectory garden wall; and the farmers have suffered very severely. (*W. T.*)"

(b*) "*Paignton*:—Slates and chimney pots flew in all directions; the old part of the town—which is for the most part thatched—suffered most; and many trees were uprooted, including some fine ones near the Old Palace Tower. At Blagdon, four ricks of corn were carried off. (*W. M. N.*)"

(c*) "*Plymouth*:—In every street, terrace, alley, and lane, slates, chimneys, wooden and zinc shutters, signboards, and trees were hurled in all directions; several houses were almost entirely unroofed; the roof of a store in Higher Street was blown completely off; a large number of trees in Green Lane and Lipson Terrace were broken down; and there was a great destruction of trees at Houndiscombe House, North Road. On the borders of Dartmoor, the greatest damage was

done in the valleys rather than upon the open hills. Farm houses and cottages suffered badly; wheat stacks were unroofed; and great havoc was occasioned among trees and shrubs.

"A considerable amount of damage was done to shipping: The *Mabel*, yacht, 12 tons, and the *Victory*, yacht, sank at their moorings, in Catwater; the *Sea-gull*, yacht, 7 tons, sank similarly under the Hoe; the *Lady Selborne*, three-masted brigantine, 210 tons, the *Agnes*, schooner, 111 tons, the *Lady Avenel*, schooner, 152 tons, and the *Emma*, yawl, yacht, 19 tons, were driven ashore at Deadman's Bay; the *Czarowitz*, brig, 120 tons, and the *Whisper*, pilot cutter, 35 tons, were driven ashore at Bear's Head; the *Janet and Jane*, schooner, 42 tons, was driven ashore at Queen Anne's Battery; the *Albion*, schooner, 59 tons, was driven ashore under the Hoe; the *Dagmar*, barque, 1,178 tons, and a German barque were driven ashore in Stonehouse Pool; the *Rothesay*, iron steam ship, 217 tons, was driven ashore near the Mewstone; the *Sans Souci*, French brigantine, was driven from her anchors, but, her foremast having been cut away, she was taken into Catwater without further damage; the *Joseph and Mary*, schooner, came into collision with the *Malta*, yacht, and each was damaged; the *Dr. Petermann*, German barque, was damaged by coming into collision with H.M.S. *Himalaya*, troopship; and a Norwegian brigantine was injured at her moorings by several vessels drifting on her.

"The barque *R. H. Jones*, of Newport, Monmouthshire, was proceeding down Channel and had got near Falmouth, but was compelled to run for Plymouth, when, instead of securing the shelter of that harbour, she ran on the breakwater, about 100 yards east of the lighthouse. With the exception of one man only, the entire crew of 18 officers and men, as well as the captain's wife and child, were drowned. The sole survivor, Alfred Richard Blom, a German seaman, stated that in the tremendous surf he managed to get hold of a spar, and he believed that some others of the crew also got on parts of the wreck. He was carried inside the breakwater, but knew not how, nor could he say how long he remained in his perilous position. Within the breakwater, the *Turquoise*, corvette, Capt. George Robinson, under orders for the Pacific, was lying at anchor; and Blom's cries being heard on board, Frederick Barnes, captain's coxswain, sprang overboard with a line, swam to the spot whence the cries proceeded, and returned with Blom.

"It was found at low water that a large vessel had sunk

inside the breakwater, across which her chain cables trailed. This was at first supposed to be the *R. H. Jones*, but a different opinion appeared to have prevailed subsequently, and there seemed reason to fear that beyond the bare facts that a ship had in the storm been driven over the breakwater and sunk on the inside, nothing whatever was known about her. The *R. H. Jones* was probably broken to pieces. (*W. M. N.*)”

(*d**) “*Plympton* :—Hundreds of trees were blown down; farm buildings were unroofed; and the inmates of some houses had to be removed in the middle of the night. (*W. M. N.*)”

(*e**) “*Roborough Down* :—The stables belonging to the Rock Hotel were dismantled; a large tree at the rear of the house was blown down; some houses were injured; and hay-ricks, as well as several large trees in the neighbourhood, sustained damage. (*W. M. N.*)”

(*f**) “*Salcombe* :—Boats of all sizes that had broken adrift were thrown together under the Snapes shore; barges filled at their anchors; and many roads were blocked up by large trees falling across them. At Rickham Sands, a little to the eastward, a foreign vessel was wrecked during the night, and all hands must have perished. She is supposed to have been a French vessel in ballast. (*W. M. N.*)”

(*g**) “*Sidmouth* :—A large brick chimney fell; lead copings were blown down; and trees were prostrated. The *Sarah* of Yarmouth, a small schooner, went ashore about a mile east of the town. (*W. M. N.*)”

(*g**) “Scarcely a house escaped, and some people had to leave their dwellings. (*W. T.*)”

(*h**) “*Southmolton* :—Roofs in many places were shattered to pieces; and an ash tree, supposed to be 200 years old, was blown down. (*W. T.*)”

(*i**) “*Starcross* :—A falling chimney carried in the roof of a house, and the whole fell across two beds, where six children were asleep, but no serious injury was sustained. (*W. M. N.*)”

(*j**) “*Stoke Canon* :—Half a dozen elms were blown down, as were about a dozen other trees, between the Weir and the Water-works at Pynes. (*W. T.*)”

(k*) "*Stonehouse* :—The iron roof of the Commissariat Stores, near the Admiral's Hard, was completely blown away; part of it fell on a house in Cremyll Street, and crushed it entirely; whilst a second portion of it broke in the roof of another house in the same street. The roof of still another house in Cremyll Street was so injured that the inmates escaped with difficulty. (*W. M. N.*)"

(l*) "*Tavistock* :—Huge trees were ripped up; houses were unroofed; the engine-shed at the Railway Station was blown down; some of the coal-sheds were demolished; and the new church was damaged. (*W. M. N.*)"

(m*) "*Teignmouth* :—The Life Boat saved 10 fishermen who could not get over the bar; great damage was done to house property; trees were blown across the roads; and many of the boats in the harbour were sunk or damaged."

(n*) "*Torquay* :—Houses were much damaged; the *Oimara*, a large yacht, broke from her moorings in the outer harbour, and was driven ashore near the Torbay Hotel. (*W. M. N.*)"

(n*) "Numerous fine trees, some of them of considerable age, were uprooted, or otherwise greatly injured, in the Tor Abbey avenues, the public roads and walks throughout the neighbourhood, and the grounds belonging to the villas. (*T. T.*)"

(o*) "*Torrington* :—In South Street, Well Street, and Calf Street immense damage was done. A chimney stack in a tanyard fell; an immense ash tree, which has stood for ages on Barley Grove, was destroyed; and much damage was done to corn ricks at several places in the vicinity. (*W. T.*)"

(p*) "*Totnes* :—Chimney pots were blown down; some houses were partially unroofed; and an incredible number of trees were uprooted, of which 17 were near the Railway Station, and about 20 at Follaton. Several large ones fell at Bridgetown Cemetery and broke tombstones. (*W. M. N.*)"

(B). *Effect of the Storm on Vegetation* :—

(a) In a letter dated "Exeter, Oct. 29, 1877," which appeared in the *Western Times*, Mr. Parfitt directed special attention to the effect the storm produced on vegetation,

remarking "that nearly all trees, shrubs, and flowers, that were exposed to the fury of the storm, presented the next morning the appearance of having been scorched. The leaves were turned brown and shrivelled up, as if they had been subjected to the action of fire. Several sallow bushes had their leaves on the west side torn into shreds, split from the edge to the mid-rib, presenting a curious appearance, but not having turned so brown as those of the ash, elm, apple, elder, white-thorn, privet, oak, and Spanish chestnut, all of which, on the west side, were completely withered up and of a deep brown colour, whilst the other sides of the trees remained green as before the storm. The coriaceous-leaved plants, such as common laurels, were not so much hurt as the softer-leaved plants; the young leaves and shoots of the laurel, however, were withered. A thin-leaved variety of the common laurel, growing in Mr. Sclater's Nursery, was so affected that nearly all the leaves on the west side had the appearance of being burnt on their edges. The ivy and holly seem almost the only trees that escaped. The leaves of the wild rose, quite green before the storm, were after it crisped and withered up. . . . Various suggestions have been made as to the cause of this withering of the leaves exposed to the full fury of the gale, for it is only those that were so exposed that have been thus affected. Some have attributed it to the salt that the wind took up in its passage over the waves of the sea. . . . Another suggestion is that the velocity of the wind dried up the sap in the leaves, and so they withered after they were exhausted of moisture. Again, it has been said that it was a hot wind, something after the character of a sirocco. (*E. P.*)"

Mr. Parfitt is sceptical about the salt hypothesis. In a manuscript communication with which he favoured me on the subject, he states that Mr. Gamlen had observed that the flowers and plants about Taunton had suffered just in the same way as at Exeter.

(b) Early last May, Mr. Parfitt favoured me with *Some further Notes on the Effects of the Gale*, in which he says, "On Friday, 19th April, 1878, a friend and I made an excursion along the crest of the high ground from Exmouth to Budleigh Salterton; and, where the vegetation is fully exposed, I was greatly struck by the appearance of the black-thorn and furze; all the small shoots and branches fully exposed to the west (the direction from which the gale blew) were killed. This was very conspicuous at the time of our

visit, as the parts not so exposed were either in flower or in leaf. Some of the larger exposed branches indicated that life was not quite extinct, as they were putting forth a few buds, though otherwise withered and dried up. Wherever a hillock or rise in the land broke the force of the gale, we found the bushes thus protected either in leaf or in flower, and thus contrasting strongly with those which, through exposure, were dried and withered.

"Bushes exposed to sea breezes, and occasionally severe gales laden with salt spray, from the east, showed nothing, on that aspect, of the withered or dried-up appearance which their other side exhibited.

"On one hedgebank the furze had quite a bleached appearance, relieved by only a few buds breaking out of the older wood; whilst the bushes not so exposed were in full blossom.

"Two bay trees, at Budleigh Salterton, though trimmed and shaved, showed that they had been very much cut and withered on the *west* side, contrasting strongly with the opposite side, which was entirely unaffected and of the natural green colour. (E. P.)"

(c) Dr. Lake was so good as to send me, on 17th May, 1878, the following Memorandum of his observations of the effect of the same storm on vegetation at Teignmouth:—

"There was a singular parched condition of vegetation wherever it had come within the influence of the storm, the like of which I had never seen. Dry leaves and twigs were strewn about in some places ankle deep, while the leaves remaining on the trees were sere and blasted. In the garden the geraniums were withered; the stems and leaves of the sweet-scented verbena torn, faded, dried up, and stiffened; the rose bushes in the same condition, with the flower buds and blooms cut off, in some cases, as sharply as if with a knife. Everything that had caught the force of the wind looked as if the breath of a furnace had passed over it. Considering the freshness and beauty of the gardens on the day before, the words of Joel seemed hardly inappropriate: 'The land is as the garden of Eden before them, and behind them a desolate wilderness.' [ii. 3.] All vegetation also and all the doors and window-ledges of the houses were covered with fine sand, while the streets looked furrowed and bare as after impetuous rain.

"The maximum and minimum temperatures of the days from Oct. 11th to 16th inclusive were as follow:—

October 11th	.....	Max. 60°·0	.....	Min. 45°·2
12th	.....	63°·4	.....	45°·9
13th	.....	62°·5	.....	52°·2
14th	.....	65°·6	.....	57°·2
15th	.....	57°·0	.....	41°·4
16th	.....	56°·0	.....	42°·7

“On the 14th, though the wind was high, yet the air all through the day felt warm, and the maximum temperature of that day was the highest for the month. The amount of rainfall too, from the first of the month to that measured on the morning of the 15th was only ·06 inch, of which ·02 was measured on the 11th, ·03 on the 13th, and only ·01 on the morning after the storm. Very high winds are usually accompanied by heavy rain, but with this storm such was not the case. It may be remarked also that the wind blew along the estuary of the Teign and from the land, and not across the sand of the sea shore. (W. C. L.)”

(d) “I may add that within a fortnight after the gale, I had occasion to go to Monmouthshire, and noted that there, as well as throughout the journey, trees and shrubs were affected precisely as Mr. Parfitt and Dr. Lake describe; and it may be added that not only was the injury restricted to the windward side of each plant, but that plants having a house or any other comparatively lofty object between them and the south-western horizon escaped with little or no injury, whilst such as stood at, or a little beyond, the leeward end of a narrow opening between such objects suffered severely.

“It may not be out of place to mention that a similar change was produced on evergreens by a north-easterly gale early in 1870, and that I noted its occurrence in various parts of Devon, Somerset, and Dorset. A fine specimen of the cedar of Goa = *Cupressus lusitanicus*, Will., in my garden, was much injured on the north-eastern side on that occasion, and though perfectly healthy, it still retains distinct evidence of the effect of the gale.

“It may be further added that Mr. J. C. Bellamy directed attention to, and discussed, phenomena of the same kind in his *Natural History of South Devon* (1839), pp. 179, 180, and 182.

“The subject occupied much attention at Torquay on the occurrence of the injury caused by the storm of 1870, already mentioned; and two or three papers on it were read to the Natural History Society of that town. One of these, which I had the pleasure of preparing and printing, concluded with the following general statements:—

“‘1st.—That winds from the west and south, as well as from the east and north-east, are capable of producing the same blighting effect.

“‘2nd.—That the effect is most marked on the windward side of the injured plant.

“‘3rd.—That it is not restricted to any particular part of the year, since it has occurred in February, May or June, July, and October.

“‘4th.—That it is not due to low temperature, for Mr. Bellamy expressly states that it occurs simultaneously with a rise of temperature, and gives instances of its occurrence in the summer.

“‘5th.—That it occurs with wet winds, and in wet seasons, as frequently at least as in dry ones.

“‘6th.—That in every recorded instance it has been preceded by a very high wind.

“‘7th.—That plants sheltered by hedges, &c., are at most but little injured.

“‘8th.—That the laurel is extremely liable to be affected by the blighting agent.’ (W. P.)”

(C) *Effect of the Storm on the Lower Animals:—*

Mr. Parfitt writes that information reached him, that, “with the exception of the horses, all the animals on a farm near Barnstaple made the most dismal cries during the storm. The cows, pigs, sheep, and dogs kept up continuous mournful cries, which, with the howling and roaring of the wind, made an impression on the hearer never to be forgotten. (E. P.)”

(D) *The Tor Abbey Elm:—*

“Amongst the numerous trees uprooted in the Torquay district by the tempest of 14th–15th October, 1877, was a magnificent elm, which had stood in front of Ehrenberg Hall, near Tor Abbey. Between its roots was a considerable quantity of rubbish, placed beneath the tree, it may be presumed, when it was planted, and consisting of bones—including those of horse, ox, sheep, and dog—oyster shells, and pieces of roofing slate. The object of this memorandum is to direct attention to the presence of the last, for it cannot be doubted that they afford evidence that, in the Torquay district, slate was used for roofing as long ago as the date when the tree was planted; and the great size of the elm has suggested that that date was probably some centuries ago. It happened that after its fall the stem was sawn across at what would be about three feet above the ground before the prostration. The horizontal section proved

to be somewhat elliptical, and measured 5 feet 3·5 inches in greatest diameter by 4 feet 10 inches in least, thus giving a mean diameter of rather over 5 feet, and a circumference of nearly 16 feet. I carefully counted the rings of "annual growth" and found them 144, but, whilst I have no doubt of the correctness of this number, it should be stated that one of the workmen—H. Grute—had previously made them 131, and another—W. Gidley—138.

"Though the tree was quite vigorous in all its branches, and was without indications of decay, it had been feared that it was not perfectly secured in the soil, and, as a precautionary measure, props had been applied to it two or three years before its overthrow. Nor did the sections made through the trunk after its fall disclose the least trace of loss of vitality; it was perfectly sound from bark to centre, and the rings, completely continuous around the entire periphery, presented no peculiarity beyond that of being thickest on the southern or warmest side.

"It having been suggested that trees may, perhaps, continue to *live* long after they have ceased to *grow*, and that, in such a case, the rings would show the duration, not of *life*, but of *growth* merely, I submitted the case to one of the most eminent botanists of the present day, who, in his reply, dated 9th November, 1877, stated that old trees, in an imperfect condition, may still continue to live, and form wood on one side only, when it would not be possible to arrive at more than an approximate idea of the length of the period subsequent to the formation of the perfect rings. He added that popular tradition often greatly exaggerated the age of large trees; that in his opinion the tree under notice was not more than 144 years old; and that the elm, being a fast-growing tree, would become of great size in that time under favourable conditions.

"The tree, therefore, may be said to have disclosed nothing more than the fact that as early as the year 1733 slate was occasionally used for roofing on the shores of Torbay. I may add that, from its characters, the slate, represented by the fragments found under the tree, was probably derived from Devonshire. (W. P.)"

(2) *Meteor of 2nd December, 1877*:—A brilliant meteor was noted at Torquay on the evening of 2nd December, 1877, and two observers—the Rev. Prebendary Wolfe, M.A., Torquay, and Mr. G. P. Wilson, Torquay—have been so good as to send me the following memoranda respecting it:—

(A) "I was standing very near the gate of 'The Elms,' at Torre, at about half-past 8 p.m., on 2nd December, 1877, when a meteor appeared due south-west from where I stood. It shot across the sky in a downward direction towards west-south-west, and was visible about 5 or 6 seconds. It seemed quite globular, and about as large as a moderator lamp—say six inches in diameter. It was intensely luminous, rendering every object quite visible. Its light, in character and quality, was most like magnesium light. I looked at it steadily from its first appearance to its obscuration without feeling any unpleasant sensation in the eye. Its first appearance was a burst of white light. It moved with great rapidity, leaving a train of bright sparks behind. At the end of one-third of its flight it flashed more brilliantly, and was instantly followed by a bright red tail of flaming fire. The length of this tail was about five times the diameter of the globe; and the tail itself was as distinctly flames, the product of fire—irregular, waving, lambent—as any flame from materials in a state of combustion I ever saw. Its colour was red, like ordinary flames, for its whole length, but the nucleus continued of the same intense white brilliancy from first to last. No sparks were emitted after it burst into flame. The first burst into flame was precisely as if a fire-balloon carrying a magnesium light had caught fire. Indeed, I thought at the moment it was a fire-balloon on fire. (R. R. W.)"

(B) "As I had an excellent opportunity of seeing the meteor on Sunday night, the 2nd December, a note on its appearance may not prove uninteresting. Looking across Torbay from a point on the road under Warren Hill, from Torquay to the Railway Station, and about midway between Cumper's Hotel and Abbey Crescent, at 8.20 p.m., a meteor burst suddenly into view in a direction—from my position—a few degrees west of south, *i.e.* between S.S.W. and S., and, speaking approximately, at an elevation of 35°. It had the appearance of a ball of white fire, lighting up the country like a fine star from a sky-rocket, and having an apparent diameter of about 2 inches. In its downward and dextro-oblique (*i.e.* nearly westerly) course it left a momentary but distinct red streak behind it along its track. The meteor finally disappeared when at an elevation of about 10°. When it had run about two-thirds of the entire length of its course, the meteor disappeared for a moment—the red streak, however, still remained visible—and then, reappearing as brilliant as before, continued its course for about half its previous dis-

tance; the final disappearance being sudden, and unattended by any visible or audible explosion.

"Unless caused by a cloud, the disappearance and reappearance seems certainly remarkable. The sky was perfectly cloudless, and, looking afterwards in the direction in which the meteor had appeared, not the slightest trace of a cloud could be discerned, while, from the brilliancy of the ball and the short space during which it momentarily disappeared, it would have required a narrow and very dense cloud to have caused the obscuration, but in this case the streak would probably have been obscured too. (G. P. W.)"

There are one or two points in the foregoing memoranda deserving a brief remark:

The observers were educated men, not unaccustomed to make and record observations, yet when speaking of the apparent diameter of the meteor, whilst one estimates it at 6 inches, the other sets it down at 2 inches. This cannot be ascribed to a difference in the distances of the meteor from them, as, speaking practically, the distances must have been the same. In all probability even 2 inches was too liberal an estimate.

Again, the observers were at the extremities of a line from 1.5 to 1.75 mile long, having a north-west and south-east direction, and they were both looking towards the same part of the sky. If, as he states, the observer at the north-western end saw the meteor due south-west, the other ought to have seen it, of course, in a more westerly direction; but instead of doing so, he saw it, he says, between S.S.W. and S.

(3) *Storm of 28-29th March, 1878*:—A violent storm occurred on the 28-29th March, 1878, which, whilst it did a great amount of damage in various parts of Devonshire, was chiefly noteworthy on account of its being attended by a fall of snow unusually heavy for this county. The following summary has been compiled from reports in the *Western Morning News* of the 30th of the month:—

(A) "The wind blew principally from E. and E.N.E. At Kingsbridge Road Station, on the South Devon Railway, the snow was so deep that trains could not pass. The up trains leaving Plymouth at 8.35, 9.35, 10.35, and 2.15 were all congregated together at Ivybridge, whilst the down trains from Newton were detained at Totnes, and, as if to add to the mischance, all telegraphic communication with Plymouth

had been destroyed by the storm. Notwithstanding the efforts of the authorities, the first train did not pass until about 3 p.m. An auctioneer who endeavoured to ride from Ivybridge to near Modbury, where he was engaged to hold a sale, had to abandon the attempt; and he returned with the report of 'the snow being up to his horse's neck.' (*W. M. N.*)"

(B) The Kingsbridge correspondent wrote: "The coach which left here this morning at seven o'clock for the Kingsbridge Road Station was obliged to return, as about three miles from the station the road was completely blocked with snow. The Earl of Devon, in a carriage with a pair of horses, bound to the station, was also obliged to return to Kingsbridge. A man was sent on horseback with the north mail bags, which are generally conveyed by coach, but he has been obliged to return, the road being quite blocked up with snow. (*W. M. N.*)"

(C) The Exeter correspondent had to tell a similar tale. "Information," he says, "reached Exeter in the course of yesterday morning that the Barnstaple and Ilfracombe, London and South-Western (Exeter and Devonport), South Devon, and Culm Valley lines had been blocked by the snow. It was reported that the destruction [? detention] on the narrow gauge to Devonport took place at a point midway between Lidford and Bridestowe stations, part of the first up train having been thrown off the metals by running into a drift in a deep cutting. A train was got through to Exeter by a quarter to six o'clock. (*W. M. N.*)"

(D) "In the neighbourhood of Lydford," according to the same paper, "the snowfall began about half-past ten o'clock on Thursday night [28th March], and continued with almost unabated violence until yesterday [29th March] at noon. The drift was very great, and in some places was from twelve to fourteen feet deep. The 7.20 a.m. train from Devonport was entirely blocked in a cutting about half a mile from Bridestowe. In some parts of the cutting the drift was as high as the carriages, and in other parts the line was covered to the extent of four and five feet. (*W. M. N.*)"

(E) A Tavistock correspondent states, that "Around Bridestowe and Lydford the snow drifted in some places to a depth of thirty feet;" and that "Mr. Chilworth, a butcher attending the Tavistock market, had his cart of meat snowed up on Heathfield, and it was not dug out until the evening. (*W. M. N.*)"

V. NUMISMATICAL.

(1) "On 17th August, 1877, there was found in the ground excavated for making a drain at Sidmouth, a silver penny, Elizabeth. Rosa sine spina visible. Reverse. Arms of France and England quarterly. Legend Lon: visible. (N. S. H.)"

(2) "A silver penny (? James), Mint mark WOR., was found on Sidmouth beach in October, 1877, and is in Mr. Hutchinson's collection. (N. S. H.)"

(3) "A copper token—a Lyme Regis farthing, 1669—was found on the margin of the river Sid, in October, 1877, and is in Mr. Hutchinson's collection. (N. S. H.)"

(4) "An Elizabeth shilling was found in the 'black sand' on Sidmouth beach, in November, 1877, by Mr. J. Bond, to whom it now belongs. (N. S. H.)"

(5) "A shilling of William III., a sixpence of George II., and three small silver coins, nearly obliterated, were found in the sands in front of the Esplanade, Sidmouth, in November, 1877, by a person named Willey. (N. S. H.)"

(6) "A third brass of Valerianus is said to have been found near the Submerged Forest on Sidmouth beach, by Mr. E. Bartlett, on 1st April, 1878. (N. S. H.)"

(7) An Abbey piece, or Nuremberg token, was found in Russel Street, Sidmouth, in April, 1878. (N. S. H.)"

(8) "A Sherborne token—Obverse, a Bishop's mitre. Reverse, 'Sherborne farthing for the poor, 1669'—was found on Sidmouth beach, by Mr. Hutchinson, to whom it now belongs, in April, 1878. (N. S. H.)"

9. "A silver penny of George III., Maundy Money, was found on Sidmouth beach, in May, 1878, by Mr. W. Drewe, to whom it now belongs. (N. S. H.)"

(10) "*Nuremberg Jettons, or Counters*.:—In the course of the autumn of 1877, two Nuremberg tokens, which I bought afterwards, were found separately in gardens at Tiverton.

"They are of thin brass, and are respectively .875 inch and 1 inch in diameter. The smaller one is of a type very often

found, not only in Devon, but in all parts of England. It has on the Obverse, a rose in the centre of the field, and around it, 3 crowns alternate with 3 *fleurs-de-lis*. Reverse, a globe surmounted with a Greek cross, enclosed by a tressure of 3 curved and 3 angular sides. The legends are between 2 beaded circles,

"Ob. 'WOLF . LAVFER . RECH[en] PFEN[in]G . MACH'(er)
(Wolf Laufer, reckoning-penny maker.)

"Rev. 'DAS . GLVCK . VND . GLAS . WIE . BALD . BRICHT,'
(or, literally, The good luck and glass as soon break.)

"This legend is more uncommon than many others in my collection, which have on the Rev. a proverb, or a short sentence (in old German) of a moral, or religious character. I have several, reading thus: 'Gottes . segen . macht . reich' (= God's blessing maketh rich); 'Das . wort . Gotes . bleibt ewick' (= God's word abides for ever); 'Hevt . rodt . morgen . todt' (= To-day ruddy (or alive), to-morrow dead); 'Gott . allein . die . ehre . sei' (=To God alone be the glory). The above were all found, with several others, in Devon.

"The chief makers of these tokens were the members of two Nuremberg families; viz. Laufer and Krauwinkel; Hans, or Hanns (= the German John) Krauwinkel, being the most numerous. There must have been a very extensive series of them throughout the 17th century, as about 40,000 varieties are described in a work published in Prague, by Jos. Neumann, in 6 vols. oct., 1870.

"The larger coin has on the Obverse, a full-faced bust of an infantile boy, with a decorated robe, a laurel wreath on his head, and the legend 'GALLICUS DELPHINUS.' On the Reverse is a representation of a dolphin, which, it is said, had the honour of giving its name as a title, from 1349 to 1830, to the eldest son of the king of France, and heir of the crown.

"Legend, in an outer circle,

"Rev. 'CONRAD . LAVFFER . RECH : PFEN : MACH : IN . NVRNB'[erg]. In an inner circle, 'J'AIME ET SVIS AIME.'

"This singular token may be called a numismatic curiosity, in having *three* languages upon it; viz., Latin, German, and French, which I never saw upon any other coin. The *loving* and *beloved* Dauphin became, I believe, 'Le grand Monarque,' whose armies so often met in battle our English forces under the great Duke of Marlborough. He (Louis XIV.) was only five years old when his father died, in 1643, and this fact will determine the age of the token, which was probably struck just before that event.

"Jettons (spelt *jeton* in the French language, derived from

jetter, to cast) were used formerly in reckoning numbers of articles; and when 20 was counted one of the jettons was cast aside, and this process was repeated till all were counted. (H. S. G.)”

VI. ORNITHOLOGY.

(1) *White Swallow*:—The following Note was cut from the *Western Morning News* of 7th September, 1877:—

“SIR,—In company with three other persons I watched for some time this morning, from a garden in Bridgetown, a perfectly white swallow on the wing. I believe such a variety to be very rare.—Yours truly,
GOONHILLY.

“Totnes, September 5th, 1877. (*W. M. N.*)”

Bellamy, speaking of the Swallow, says, “White specimens of this and the next species [*The Martin*, *Hirundo urbica*] have been seen with us.”—*Natural History of South Devon*, 1839, p. 208.

(2) *Dotterel and Cockle*:—The following paragraph appeared in the *Western Times* of 11th September, 1877:—

“BIRD CAUGHT BY A COCKLE.—Mr. F. T. Eyre, writing from Little Hill, Instow, to *Land and Water*, says: A curious instance of a bird (a dotterel) being caught by a cockle occurred here last week. The bird was seen to rise and drop in the water, as if overpowered, and on examination it was found that a cockle had tight hold of the upper beak. My friend opened the cockle with his knife, and the bird flew away. Doubtless the bird saw the cockle's hole in the sand, took it for a worm-hole, and so got caught. (*W. T.*)”

Mr. Eyre, to whom I at once wrote on the subject, was so good as to inform me, on the 13th of the same month, that the statement was quite correct, and that, as far as he could remember, the event occurred on Sunday, August 26, 1877.

VII. REPTILIAN.

(1) *The Green Lizard = Lacertia viridis*, Aldrov.:—“On Tuesday, 9th October, 1877, between 11 a.m. and noon, the day being very fine, and the sun shining brightly, several members of my family saw a specimen of the Green Lizard, near the eastern end of the Rock Walk, Torquay, attached to a naked vertical stone wall, having a south aspect, fully exposed to the sun, and having no vegetation within several feet in every direction. The Lizard remained perfectly stationary about six feet above the ground, so that the party

had the opportunity of observing it closely. Its colour was a very vivid green.

"A few years ago—certainly not more than five—a specimen of the same species was brought to my house by a working man, who had taken it near the same spot. It was seen by several members of my family, and as I was from home at the time, it was put under a hand glass on the grass in my garden; but on my return it had escaped, so that I was not so fortunate as to see it.

"Being aware that for some years previously Green Lizards had been occasionally seen near the spot where the specimen was observed on 9th October, 1877, and being under the impression that I had been told that in the first instance, and about thirty years ago, they were brought there from some locality beyond Britain, I wrote Dr. Battersby, formerly resident at Torquay, and familiar with the natural history of the district, requesting such information on the question as he could give. In his reply, dated 6th November, 1877, he stated that he, too, understood that some one had placed specimens of the Green Lizard on Waldon Hill, Torquay, that they had been brought from Jersey, that it was done not earlier than 1842, that one of them had been killed by some boys, and that at least one had been seen subsequently. (W. P.)"

(Signed) WM. PENGELLY, Hon. Sec. Com.

(Signed) RICHARD JOHN KING, Chairman, *pro tem.*

21st June, 1878.

THIRD REPORT OF THE COMMITTEE ON DEVONSHIRE FOLK-LORE.

THIRD REPORT *of the Committee*—*Mr. P. F. S. Amery, Mr. R. Dymond, Rev. W. Harpley, Mr. P. Q. Karkeek, Mr. R. J. King, and Mr. J. Brooking Rowe—for the purpose of collecting notes on Devonshire Folk-Lore.*

Edited by R. J. KING, Hon. Secretary of the Committee.

(Read at Paignton, July, 1878.)

THE notices of Devonshire Folk-Lore, received since the meeting of the Association at Kingsbridge in 1877, have been arranged, so far as possible, under the distinct heads of Stories and Traditions; Charms or Medical Superstitions; Witchcraft; General Folk-Lore; and Popular Beliefs and Sayings. The name of the contributor is appended to each note.

RICHARD JOHN KING.

I. STORIES AND TRADITIONS.

Hennock Folk-Lore (As told by Robert Coombes, Oct. 31, 1877).—"Parson Harris, who was parson at Hennock a good bit ago, was a wonderful man. He knew a thing or two more than other people. While he lived there was some one to go to if anything was stolen. One of the parishioners lost a turkey, and he went straight to the parson. The man that stole it had plucked it and put it down to roast; but the spell did its work. The thief could do no other but snatch it up, carry it on the spit to its rightful owner, and give it up to him. Then a man named Joseph Loveys lost his mallard [*i.e.* his drake], and 'in course' he went and told the parson. 'Never mind,' said Parson Harris, 'only you come to church without fail next Sunday afternoon, and you shall see who took your mallard.' So in the course of his sermon Parson Harris said, 'I have one more thing to mention—the man who stole Joseph Loveys' mallard has a feather of it sticking to

his nose.' Up went the hand of *one* man to his nose, while all the others were staring about. 'That's the thief,' said Parson Harris, pointing to him.

"Parson Harris's housemaid had a young man, and he deserted her and went off to North Devon. She cried all the week, and on Saturday evening told her master all about it. 'There; don't cry, my girl,' said he, 'the young man will be glad enough to come back to you to-morrow before the day is over.' But he did not come back that day, and good reason too. The young man put his Common Prayer Book in his pocket when he dressed in the morning ready for church, and so the spell did not work. But when he took off his coat and waistcoat at night to go to bed then the spell took effect. He ran out of the house and started for Hennock; and early on Monday morning what should the girl see but her young man at the back-door, panting and out of breath in his shirt-sleeves, after walking all night to come to her."

Parson Harris, whose tombstone remains in Hennock churchyard, died about 1776.

Contributed by WILLIAM HENDERSON, Ashford Court, Ludlow.

John Cann's Rocks.—About a mile from Hennock Church, between Bottor and Sharptor, stands a less conspicuous group of rocks called John Cann's rocks. Thirty years ago the name was thus accounted for in the neighbourhood.

John Cann was a wealthy Royalist, who fought on the king's side in the civil wars. But when the cause became hopeless, and a price was set on his own head, he withdrew with such of his treasures as he could carry off, and concealed himself and them among these rocks, then much overgrown by trees. One cavern was John Cann's parlour, another John Cann's kitchen; and at night he stole out to walk in an adjoining thicket, still called "Little John's Wood." After some time, however, bloodhounds were used, and the fugitive was discovered, carried off, and executed; but the treasure is thought still to remain undiscovered.

W. HENDERSON.

The "Twisty Tree" of Ide.—Close to the village of Ide, by the side of the road, stands a "twisty tree," the bark of which goes round it in a corkscrew fashion. This peculiarity is or was thus accounted for.

The place was in old times haunted by a troublesome spright, who turned the milk and the beer sour, kept butter from coming and dough from rising, frightened maidens in

the dark and set neighbours quarrelling, so that Ide was almost uninhabitable. An Oxford scholar was applied to, and he laid the ghost in this tree. Every discomfort was at once at an end; but the spirit hates his prison, and never ceases turning round and round within it, hence the "twistiness" of the tree.

W. HENDERSON.

II. CHARMS, OR MEDICAL SUPERSTITIONS.

Charm for Bad Eyes.—My daughter went to-day to visit an old woman in the village of Berry Narbor, who is ill. She said, "My grandchild had bad eyes, and we were told that he could be cured only by a woman who had never seen her father, blowing into his eyes through a hole in a nettle-leaf, before she had put her hand to anything for the day." His father took him every morning for nine days following to such a person at Ilfracombe, and his eyes got quite well. For a girl it must be a man who had never seen his mother.

J. MANLEY HAWKER.

VARIOUS CURES.

A servant girl, about 22 years of age, a native of Hatherleigh, but now resident at Torquay, has given me the following information respecting processes supposed, in her native village, to be curative.

W. PENGELLY.

1. *Cure for "Girding" = "Shingles" = Herpes zoster:*—The patient must be taken in the morning to "running water," where the attendant must pick seven rushes growing *by*, but not *in* the stream, and lay them *on*, and draw them *across* the affected part, which must be divested of all clothing at the time. As soon as they have been used, the rushes must be thrown into the stream, in order "that the disease may be washed away." The process must be repeated "three mornings running," on each of which fresh rushes must be gathered and used.

2. *Cure for any affection in the Eyes of a Child.*—The child must be taken in its ordinary clothing, and laid in a newly-made grave, any time before the corpse is put in. It is not necessary to repeat the act a second time. It is deemed prudent to wrap a shawl about the child, in order that it may not be chilled. My informant's cousin underwent the treatment; but, though she is now seventeen years of age, she has never been benefited by it, as her eyes are still affected.

3. *Cure for Fits.*—A person of the sex opposite that of the patient must steal lead from the window of a church, during divine service in the said church. The lead, bent into three bead-like bodies and strung on a thread, must be worn round the neck by the patient. My informant took lead from the window of Hatherleigh Church, strictly attending to the prescribed ritual, for the purpose of curing her step-father, who was afflicted with fits. He appeared to be quite cured for some months, but the malady returned subsequently, and afflicted him during the remainder of his life.

4. *Cure for Warts.*—My informant, whilst living at Hatherleigh, had warts on her hands, and got rid of them by the following remedy. She took a living snail—which, by cross-examination, I found to be a slug—and impaled it on a thorn. In two days the warts had all disappeared, and they have never reappeared.

Warts may also be removed, she says, by stealing a piece of meat—no matter from whom, or whether it be fresh or salt—and burying it in the ground. As the flesh rots, the warts will disappear. Her grandfather told her that he, to get rid of his warts, had stolen a bit of bacon from his aunt and buried it, and that he soon lost his warts.

Cure for the Bite of an Adder.—On the 13th May, 1878, a member of my family, living with me at Cator Court, in the parish of Widecombe, in the course of conversation with his farm servant, was told of the following specific for the bite of an adder :

On the horses coming up from grass this morning, one of them, a young chestnut mare, was found to have been bitten on the back (by an adder we supposed) during the night, and the place was much inflamed. Ammonia was ordered and rubbed in ; but the hind, not believing in doctor's stuff, made the following suggestion to his master, who was standing by :

"Suppose, sir, two or three of us lies wait for the varmint all night, and when we catch un fry un in a pan, and strike the place. I mind Mat White two or three years 'gone was stung blind, and they thought he'd 'a died, but they lied wait and got un and fried un, and Mat got well."

"But," said his master, "suppose you don't get the *real* varmint?"

"Then," answered the man, "it won't be no good."

F. H. FIRTH.

WHITE WITCH.

In July, 1877, an inquest was held at Bishopsnympton on the body of a woman who died there under peculiar circumstances. She had been ill from rheumatic fever, and was suffering from the usual debility incidental to the disease. She had been treated by her usual medical attendant, in company with another who had been called in consultation. The line of treatment not appearing to satisfy her relatives, the white witch of the neighbourhood was called in, and this worthy, after ascertaining the name, age, and day of birth of the patient, consulted the planets, and then proceeded to go through some sort of hocus pocus, with what one of the witnesses described as "trincklements."

"He had some iron rods in another old tin box, seven or eight in number, and other 'trincklements.' There might have been something on the top of the rods, hanging on. I think I saw one of the rods in my missus's hand. He talked a good deal, but what he said I don't know. He told her she might get better, and she mightn't. He might have told her to strike the iron rod on a piece of stuff—which looked to me like iron—which he put on the table by the bedside."

The white witch was paid 25s. for this ceremony, but, strange to say, the woman died, and an unappreciative bench of magistrates condemned this professor of the healing art to some weeks' imprisonment. Fortunately for him there was an informality in the proceedings, and the conviction was quashed on appeal at the assizes.

PAUL G. KARKEEK.

III. WITCHCRAFT.

Bewitched Pigs.—If a pig dies through witchcraft the witch may be discovered by the following process: Take the heart of the dead pig, stick it full of needles and pins, and roast it at the fire of the family to whom the pig belonged, all the members of which must be seated round the fire watching the operations. During the process the witch will enter the house. In other words, the first person who enters the house whilst the heart is being roasted is the witch.

In a case well known to my informant, the first person who entered was believed by every member of the family to be a very true and dear friend, and utterly incapable of witchcraft.

A person at Hatherleigh, who had lost several pigs in

succession through witchcraft, bought another, and, as a precaution, placed a Bible over the door of the pig's house. That pig lived, and "gooded."

W. PENGELLY.

IV. GENERAL FOLK-LORE.

Cutting the Rainbow.—As I passed through the village of Exwick, August 28th, 1877, a misty rain had just ceased, and a continuous or perfect rainbow was depicted on a bank of cloud. Two children were playing in the road, when one said to the other, "Oh, there's a rainbow! Let's cut it." She then sought for and found two straws, which she placed crosswise on the road. One of the straws was placed in the direction of the expanded bow, and the other at right angles to it, thus cutting the bow asunder. Hearing what the child said, I turned round to observe the bow, and the process of cutting it. Asking the child what it was for, or why she did that, she was very shy; but at last I understood her to say that it was to stop the rain.

E. PARFITT.

Feathers and Dying.—A retired gardener, eighty-six years of age, born in Yorkshire, but resident in Torquay since 1846, observing, on 24th January, 1878, a servant plucking a pigeon, cautioned her not to put the feathers into a pillow. On being asked "Why not?" he replied, "You can't die upon pigeon's feathers."—24th January, 1878.

W. PENGELLY.

Thirteen sitting at Table together.—The servant mentioned above said to a member of the family with whom she was living at Torquay, "You know, Miss, there'll be thirteen *sitting* at table this evening, so one of you'd better take the kitten on your lap, to keep the bad luck." She added that the kitten being simply in the room would not suffice; it must be sitting at table; and that this would be the fact if it were kept quietly on the lap of one of the party.

W. PENGELLY.

De Rebus obstetricis.—The very high value placed by seamen on the child's caul is well known, and advertisements of this infallible preservative from drowning being for sale may occasionally be seen in the London papers now. The origin of this myth is difficult to discover; but it may be that because the child floats *in utero*, in the fluid contained on the amnion, that therefore this amnion ought to enable its possessor to float in after life. I am not aware if these interesting

relics have ever been used in the manufacture of swimming belts, but a curious adjunct to this belief has lately come to my knowledge. A very old *sage femme* in Torquay, of immense experience, recently told me that the placenta should always be placed in a perfectly dry vessel, because if it contained any fluid whatever the child would at some time earlier or later in life surely die by drowning. She impressed this on me very strongly, and I am sure from her manner that she constantly acted up to it herself.

PAUL Q. KARKEEK.

The Sun Shining on Christmas-day.—There is a superstition prevalent amongst the farmers and country people, that should the day be fine, and the sun shine on the apple trees on Christmas-day, there will be good crops. If the sun does not shine on this day, the forebodings are gloomy.

E. PARFITT.

V. POPULAR BELIEFS AND SAYINGS.

All the notes under this head are contributed by Mr. Pengelly.

A servant girl, about nineteen years of age, born at Torquay, where she still resides, has enabled me to make the following memoranda:—

Noses and Strangers.—"I know," said the girl, "there's a stranger coming, 'cause my nose is itching." On being questioned, she expressed her belief in the "sign," and added that itching only on the right side of the nose foretold a *stranger woman*, and on the left a *man*.

14th February, 1878. W. P.

Cats and Strangers.—The coming of a stranger may be expected if a cat, when washing her face, puts her paw above either of her ears.

14th February, 1878. W. P.

Ear-burning.—If your *right* ear burn, your mother is thinking of you; if your *left* ear, you are occupying your lover's thoughts.

21st February, 1878. W. P.

Cutting Nails.—If you cut your nails before breakfast on a Monday, you'll receive a present during that week.

21st February, 1878. W. P.

Sneezing.—"Sneeze on a Monday, sneeze for danger.
Sneeze on a Tuesday, see a stranger.

Sneeze on a Wednesday, sneeze for a letter.
 Sneeze on a Thursday, something better.
 Sneeze on a Friday, sneeze for sorrow.
 Sneeze on a Saturday, see your sweetheart to-morrow."

21st February, 1878. W. P.

Sweethearts and Fires.—Having succeeded in lighting a fire without trouble to-day, the girl remarked, "My young man's in a good temper;" and, on being questioned, replied, "'Tis always a saying when a fire burns up quick."

22nd February, 1878. W. P.

Pillows and Marrying.—A bed maker who forgets to put the pillows in their places will not be married during the year of the occurrence.

27th February, 1878. W. P.

Knees and Churches.—A person whose knee itches will shortly kneel in a strange church.

27th February, 1878. W. P.

A "Sty" and a Cat's Tail.—A "sty" on the eye may be cured by "striking" it at any time with the tip of a cat's tail. The process need not be repeated.

9th March, 1878. W. P.

A "Sty" and a Widow's Ring.—A "sty" on the eye may be cured by a widow "striking" it with her wedding ring, especially if she pray silently at the time that a cure may be effected.

9th March, 1878. W. P.

Changing the Name but not the Letter.—If a lady's surname after marriage begin with the same letter as her maiden surname she will be very unlucky; for

"Change the name, but not the letter,
 Change for the worse, and not the better."

20th May, 1878. W. P.

Pins and Marrying.—As many pins as a dressmaker runs unintentionally into the under clothing of a lady when she "tries on a new dress," so many years will the said lady remain unmarried.

20th May, 1878. W. P.

Boots and Marrying.—Whoever puts a pair of any person's boots on a table will never be married.

20th May, 1878. W. P.

Cats and Babies.—If a cat be kept in a house where there is a baby, one of them, probably the baby, will die.

The following fact has lately come to my knowledge: There was a kitten in the house of a Torquay tradesman when his second child was born. In a short time both the baby and the kitten were ill, when the nursemaid, to save the child, killed the kitten. The child recovered, and is quite well.

27th May, 1878. W. P.

Ducks and Debts.—Unless you have duck for dinner on Easter-day, you'll never pay your debts.

27th May, 1878. W. P.

SECOND REPORT OF THE COMMITTEE ON DEVONSHIRE CELEBRITIES.

SECOND REPORT *of the Committee—consisting of Mr. R. Dymond, Rev. Treasurer Hawker, Mr. P. Q. Karkeek, Mr. R. J. King, and Mr. R. N. Worth—to prepare Memoirs on Devonshire Celebrities.*

Edited by Rev. Treasurer HAWKER, M.A., Hon. Sec. of the Committee.

(Read at Paignton, July, 1878.)

YOUR Committee desire to add to the existing list of Devonshire Celebrities "*Davy, John*," b. at Creedy Bridge, near Crediton, about 1750; d. 1824; chorister of Exeter Cathedral; author of the song, "Just like Love is yonder Rose," &c., and probably of "The Bay of Biscay" (?). Also, after "*Prideaux, John, Bishop of Worcester*," to add "*Trans. Devon. Assoc.*, 1877. J. M. Hawker." Also to insert after "*Robsart, Amy*," "said to have been. Pamphlet by P. Q. Karkeek, Esq." It has been suggested to your Committee, by H. Studdy, Esq., Waddeton Court, that it would add to the interest of the list if the names of the volunteers at the time of the Peninsular War were inscribed, and he has forwarded to the secretary those enrolled for the defence of Dartmouth, &c., in 1798. This appears to your Committee to be a valuable suggestion, and one to be adopted as far as possible for the county at large. The Committee desire to add to their number Mr. Edward Windeatt and Sir J. H. Kennaway.

J. M. HAWKER, Hon. Sec.
ROBERT DYMOND, Chairman.

17th June, 1878.

A Muster Roll of the Persons Enrolled and serving in the Dartmouth Independent Volunteer Field Artillery, Commanded by Henry Studdy.—

Henry Studdy, John Teage, Nicholas Brooking, junr., Richard Reed, Joseph Gloyn, Cholwil Adams, Benjamin March, John Paige, Thomas James, William Cholwich, John Snell, Thomas Egg, Wm. Gloyn, Benjamin March, junr., John Coggins, William Bartlett, William Burgess, Robert Burgoin, Abraham Brimage, Samuel Cholwich, Richard Chasty, John Dimond, Wm. Eales, Samuel Earl, William Egg, William Efford, Isaac Fooks, John Ford, Richard Gripe, Thomas Harding, Robert Harris, John Head, William Heath, Richard Hannaford, Robert Hardy, Wm. Jiffard, Samuel Kelland, William Langmead, Edward Light, Arthur Lee, Samuel Lidstone, James Mardon, Henry Martin, William Mitchelmore, John Mitchelmore, Robert Narramore, Joseph Norman, Samuel Nott, John Nott, Robert Peek, junr., Nathaniel Pike, Nicholas Parinton, John Pillar, Henry Rowe, Robert Roads, Peter Rogers, Richard Stevens, John Skedgil, William Sanders, James Issiel, Isaac Taylor, William Thomas, Edward Towl, John Wills, Richard Wootten.

A List of Officers and Men of the Dartmouth Associated Corps for the Defence of the Town and to conduct Provisions or Prisoners one stage, if required, Commanded by William Newman, Esq. Enrolled in 1798.—

William Newman, Captain ; Robert Sparke, First Lieutenant, George Bridgman, Second-Lieutenant ; Allen Perring, First Ensign, William Burgoin, Second-Ensign ; Robert Hyne, Serjeant, Robert Cranford, Serjeant, Joseph Pearce, Serjeant, John Luke, Serjeant ; Thomas Way, Corporal, William Pentecost, Corporal, John Penny, junr., Corporal, James Traies, Corporal ; Arthur Perry, Surgeon ; and the following Privates—Roope Harris Roope, Lydstone Newman, Richard Newman, William Wilson, John Alpross, Henry White, John Hele, George Sparke, junr., Samuel Sharman, George Cranford, Stephen Jarvis, Joseph Rowe, George Spark, senr., Thomas Lee, John Simmons, Timothy Norris, Thomas Shapley, Richard Walters, Robert Mortimore, John Quick, John Phillips, Robert Edwards, James Clowter, William Terry Ffford, Thomas Cawley, Bartholomew Port, Jarvis Veale, Thomas Fox, Richard Chastey, Henry Ferris, William Libby, William Lee, Francis Graham, Jacob Howe, junr., William Petherbridge, Robert Peeke, Abraham Kine, John Bryant, John Harvey, jun., Thomas Kemp, Thomas Lock, Joseph Ford, William Manning, John Harvey, senr., William Lang Paige, William Adams, Richard Cove, Arthur Lee, Thomas Lee, Thomas Lake, junr., William Beer, John Norman, John O. Bridgman, William Newman, junr., William Egg, Joseph Hamlyn, James Fox, John Stevens, Peter Ougier, junr., Robert Newman, John Luke, junr., Henry Newman, William Roope, William Petherbridge, George Banfill, Richard Lee, Thomas Way, Samuel Linnington, George Goodridge, Nicholas Mortimore.

SECOND REPORT OF COMMITTEE ON DARTMOOR.

SECOND REPORT of the Committee—consisting of Mr. J. S. Amery, Mr. C. Spence Bate, Mr. W. F. Collier, Mr. J. Divett, Mr. R. Dymond, Mr. G. Hirtzel, Rev. W. Harpley, Rev. Treasurer Hawker, Mr. F. H. Firth, Mr. R. J. King, Mr. W. Lavers, Mr. G. W. Ormerod, Mr. W. Pengelly, Mr. J. Brooking Rowe, and Rev. W. H. Thornton—for the purpose of influencing public opinion in favour of preserving the peculiarities and antiquities of Dartmoor.

Edited by W. F. COLLIER, Hon. Secretary of the Committee.

(Read at Paignton, July, 1878.)

THE Dartmoor Committee beg leave to report :

1. That Mr. Robert Dymond has been engaged during the past year in carefully preparing, for the use of the Association, a map of the Dartmoor District, including the parishes adjoining, in which he has made considerable progress. The map is on a scale of six inches to the mile, and in its minute details have been included, taken from the various parish maps made for the use of the Tithe Commissioners.

This valuable service to the Association, contributed by Mr. Dymond, will constitute a lasting record of the principal characteristics of Dartmoor as it now exists. It will be a record of the natural features of the Moor—of the rivers, the water-courses, and the tors—and also of the roads, the rights of way, and of the enclosures. It will also be an assistance to the parishioners of any parish in case their rights on the Moor should ever become a subject of dispute. The map is so constructed that additions may be made to it at any time, either of curious remains of by-gone times, or of any other detail of interest to the public.

The Committee recommend that the thanks of the Association be accorded to Mr. Dymond, for the laborious work of great utility which he has thus performed, and proposes to complete.

2. That a line of railway has been projected on Dartmoor, from the Great Western Railway Company's line at Yelverton to Prince Town, and that the Bill authorizing the construction of this line, having passed the Committee of the House of Commons, will probably become law.

This railway, if constructed, will be an encroachment on the public rights on Dartmoor, claimed by this Association, to which the public, as it will be legalized by Act of Parliament, must submit.

3. That a company has been formed to convert the peat beds on a portion of the north-western part of the moor into compressed fuel, to which company, it is alleged, extensive rights of cutting peat have been granted by the Duchy of Cornwall. As the right of cutting peat belongs to the Venville Commoners, the Dartmoor Committee doubt the power of the Duchy of Cornwall to grant rights of this nature to parties who are not commoners. They therefore consider it necessary to report the circumstance.

The Committee in reporting that a railway has been projected to the heart of Dartmoor, and that a company has been formed to remove large quantities of peat from the peat beds, take the opportunity thus afforded to call the attention of the Devonshire Association to the water supply of the county of Devon, largely dependent as it is on the quantity of rain caught and retained on Dartmoor for distribution, south, west, east, and north, by means of the rivers which take their rise in the bogs of the moor. The destruction or removal of the peat beds will cut off the supply of water at its very source. The population of Prince Town, especially if it is much increased in consequence of the advent of a railway, must inevitably, at so high a level, pollute the water to an incalculable extent. It is not too much to state, in the light of modern science, that typhoid fever at Prince Town would be distributed with the water throughout the whole of the south of Devon lying between the Tamar and the Dart, and by the agency of the water supply to shipping throughout the fleets of the royal navy and the merchant service.

The Dartmoor Committee recommend that they be re-appointed, in order that the important questions of public interest which are arising from the exercise of disputed private rights on the waste lands of Dartmoor may not be neglected.

W. F. COLLIER, Secretary.

J. MANLEY HAWKER, Chairman.

SECOND REPORT OF THE COMMITTEE ON DEVONSHIRE VERBAL PROVINCIALISMS.

SECOND REPORT of the Committee—consisting of Mr. J. S. Amery, Mr. G. Doe, Mr. R. Dymond, Mr. F. H. Firth, Mr. P. O. Hutchinson, Mr. P. Q. Karkeek, Dr. W. C. Lake, and Mr. W. Pengelly—for the purpose of noting and recording the existing use of any Verbal Provincialisms in Devonshire, in either written or spoken language, not included in the lists published in the Transactions of the Association.

Edited by F. H. FIRTH, Hon. Secretary of the Committee.

(Read at Paignton, July, 1878.)

I. EXPLANATORY.

YOUR Committee beg to report that they met almost immediately on their reappointment, and unanimously agreed on the continued use of the following Resolutions printed at the beginning of their First Report (See *Trans. Devon Assoc.* ix., 123–142), and here reproduced. The *Provincialisms* appended hereto have been collected and compiled in accordance with them.

RESOLUTIONS.

1. “That the members of this Committee be requested to observe the following regulations, with a view to uniformity of action:—

(A) To regard the following as Devonshire Provincialisms, if used by a speaker or writer within Devonshire, irrespective of their being, or not being, used elsewhere:—

(a) Every word not occurring in a good English dictionary of the present day.

(b) Every word which, though occurring in a good English dictionary of the present day, is used in a sense differing from any definition of the word given in such dictionary.

(c) Every provincial pronunciation of any word which is itself not a provincialism.

(d) Every provincial phrase or expression.

(e) Every provincial name of an animal, or vegetable, or other object.

(B) To state where and when each recorded provincialism was heard in speech, or seen in writing; and to accept nothing at second-hand.

(C) To state the sex, probable age and social status, and, if possible, the occupation, birth-place, and residence of the person using each recorded provincialism.

(D) To give the meaning of each recorded provincialism within a parenthesis immediately following the provincialism itself; and to illustrate the meaning by incorporating the word or phrase in a sentence, and if possible the very sentence employed by the person who used the provincialism.

(E) To give, in all cases requiring it, some well-known word with which the recorded provincialism rhymes, so as to show its pronunciation; or, where this is not practicable, to give a word or words in which the power of the vowel or vowels is the same as in the provincialism.

(F) To avoid all attempts at derivation.

(G) To state of each provincialism whether it has been noted by Halliwell, or Nares, or any other recognised compiler of provincial, obsolete, or obsolescent words.

(H) To write the communication respecting each recorded provincialism on a distinct and separate piece of paper, to write on one side of the paper only, and to sign and date each communication.

(I) To make each communication as brief as possible, but not to sacrifice clearness to brevity.

(J) To draw the communications so as to correspond as nearly as possible with the following examples:—

"FLEECHES (= Large Flakes. Rhymes with *Breeches*). A servant girl, a native of Prawle, South Devon, residing at Torquay, and about 23 years of age, stated in March, 1877, that the snow was 'falling in *fleeches*,' meaning in *large flakes*. She added that the *small flakes* were not *fleeches*.—19th March, 1877. X. Y."

"HAŁSE (= Hazel. The *al* having the same sound as in *Malice*, not as in *False*). A labouring man, a native of Ashburton, residing at Torquay, and about 55 years of age, stated in my hearing that he had put an '*alse*'andle into his hammer; meaning a *hazel* handle (see *Halliwell and Williams*).—19th March, 1877. X. Y."

2. "That the Report of the Committee to be presented to the next Annual General Meeting of the members of the Association shall include all suitable communications received by the Secretary not later than the 1st of June next, and that all communications received after that date shall be held over for another year."

3. "That all meetings of the Committee shall be held at Exeter; that the Secretary shall convene them by separate notices to each member, posted not less than seven clear days before the

dates of the meetings ; and that two members shall be sufficient to form a quorum, with power to act."

4. "That a meeting of the Committee shall be held not later than the 21st of June next, to receive and decide on a Report to be prepared and brought up by the Secretary."

CONTRIBUTORS.

The Committee believe that the greatest care has been exercised to secure accuracy with regard to *Provincialisms* collected in this Report ; but it must be understood that each contributor is alone responsible for the statements he makes.

Each communication closes with the initials of the contributor ; and everything which, in any case, follows such initials, in short, everything not within inverted commas, is editorial.

The full addresses represented by the initials are as follow :—

- J. S. A. = Mr. J. S. Amery, Druid, Ashburton.
- A. C. = Mr. A. Champernowne, Dartington Hall, Totnes.
- G. D. = Mr. G. Doe, Castle Street, Great Torrington.
- J. D. = Mrs. R. Dymond, Exeter.
- F. H. F. = Mr. F. H. Firth, Cator Court, Ashburton.
- A. R. H. = Mr. A. R. Hunt, Southwood, Torquay.
- W. C. L. = Dr. W. C. Lake, 2, West Cliff, Teignmouth.
- A. P. = Mr. A. Pengelly, Lamorna, Torquay.
- W. P. = Mr. W. Pengelly, Lamorna, Torquay.

REFERENCES.

When referring to writers on Verbal Provincialisms, &c., abbreviations of their names have commonly been used. In the following complete list of the works referred to, these are fully explained.

"*Bail.*" = An Universal Etymological Dictionary. By N. Bailey, 1751.

"*Bair.*" = Poetical Letters to es Brither Jan, &c. in the Devonshire Dialect. By Nathan Hogg [*i.e.* Henry Baird]. Fifth Edition. *London*: J. Russell Smith, 1865 ; and Second Series of Nathan Hogg's Poems. Fourth Edition, 1866.

"*Bar.*" = Grammar and Glossary of the Dorset Dialect, &c. By W. Barnes, B.D. A. Asher & Co., *Berlin*, 1863.

"*Clo.*" = A Glossary of Words pertaining to the Dialect of Mid-Yorkshire, &c. By C. Clough Robinson. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1876.

"*Cou.*" = The History of Polperro, &c. By Thomas Q.

Couch, F.S.A. *Truro*: W. Lake; *London*: Simpkin, Marshall, & Co., 1871.

"*Dic.*" = A Glossary of Words and Phrases pertaining to the Dialect of Cumberland. By William Dickinson, F.L.S. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1878.

"*Fra.*" = South Warwickshire Provincialisms. By Mrs. Francis. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1876.

"*Gow.*" = Surrey Provincialisms. By Granville Leveson Gower, Esq. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1876.

"*Hal.*" = A Dictionary of Archaic and Provincial Words, &c. By James Orchard Halliwell, Esq., F.R.S. In two vols. Eighth Edition. *London*: J. R. Smith, 1874.

"*Har.*" = A Glossary of Words used in Swaledale, Yorkshire. By Captain John Harland. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1873.

"*Hut.*" = A Glossary of Old and Original Words now used in the North of England, &c. By John Hutton. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1873.

"*Jen.*" = The Dialect of the West of England, particularly Somersetshire, &c. By James Jennings. Second Edition. *London*: J. R. Smith, 1869.

"*John.*" = A Dictionary of the English Language, &c. By Samuel Johnson. In two vols. Fifth Edition. *London*: 1874.

"*Lock.*" = An Exmoor Scolding. *Exeter*. [No date.]

"*Mar.*" = Provincialisms of East Yorkshire. By Mr. Marshall, 1788. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1873.

"*Nar.*" = A Glossary, &c. By Robert Nares, A.M., F.R.S., F.A.S. A new edition. By J. O. Halliwell, Esq., F.R.S., &c., and T. Wright, Esq., M.A., F.S.A., &c. *London*: J. R. Smith, 1876.

"*N. & Q.*" = Notes and Queries.

"*Nod.*" = A Glossary of the Lancashire Dialect. By John H. Nodal and George Milner. *Manchester*: A. Ireland & Co., 1875.

"*Pal.*" = A Dialogue in the Devonshire Dialect (in Three Parts). By a Lady. To which is added a Glossary, by J. F. Palmer. *London*: Longman, Rees, Orme, Brown, Green and Longman. 1837.

"*Par.*" = A Dictionary of the Sussex Dialect, &c. By Rev. W. D. Parish. *Lewes*: Farncombe & Co., 1875.

"*Park.*" = Oxfordshire Words. By Mrs. Parker. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1876.

"*Pea.*" = A Glossary of Words used in the Wapentakes of Manley and Corringham, Lincolnshire. By Edward Peacock, F.S.A. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1877.

"*Peg.*" = An Alphabet of Kenticisms, &c. By Samuel Pegge, A.M. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1876.

"*Pul.*" = Rustic Sketches, &c. By G. P. R. Pulman. Third Edition. *London*: J. R. Smith, 1871.

"*Rob.*" = A Glossary of Words used in the Neighbourhood of Whitby. By F. K. Robinson. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1875-6.

"*Rock.*" = Jim and Nell, &c. By a Devonshire Man [*i.e.* W. F. Rock]. *London*: 1867.

"*Ros.*" = A Glossary of Words used in Holderness, in the East Riding of Yorkshire. By Frederick Ross, F.R.H.S., Richard Stead, and Thomas Holderness. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1877.

"*Tus.*" = Five Hundred Pointes of Good Husbandrie. By Thomas Tusser. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1878.

"*Web.*" = Dr. Webster's Complete Dictionary of the English Language. By C. A. Goodrich, D.D., LL.D., and N. Porter, D.D. *London*: G. Bell & Sons, 1864.

"*Willan.*" = A List of Ancient Words at present used in the Mountainous District of the West Riding of Yorkshire. By R. Willan, M.D., F.R.S., &c. *London*: (*Eng. Dial. Soc.*) Trübner & Co., 1873.

"*Wil.*" = A Glossary of Provincial Words and Phrases in use in Somersetshire. By W. P. Williams, M.A., and the late W. A. Jones, M.A., F.G.S. *London*: Longmans, Green & Co., 1873.

"*Wri.*" = Dictionary of obsolete and provincial English, &c. By Thomas Wright, Esq., M.A., F.S.A., &c. *London*: Henry G. Bohn, 1857.

CONTRIBUTIONS.

Some of the words in the following list occur in Johnson (Ed. 1784), and a still greater number in Webster (Ed. 1864), as the references show. The Committee, however, have thought it undesirable to expunge them, as, from their antiquatedness in some cases, and perhaps their proximity to slang in others, they are not to be found in ordinary English Dictionaries.

The entire collection is arranged in alphabetical order; and, to facilitate reference, each "provincialism" is preceded by a numeral marking its place in the list.

THE PROVINCIALISMS.

1. "A MANY (= Many). A gentleman, born in Lancashire, but resident at Torquay during several years, about 35 years

of age, said to me to-day, 'There were *a many* people at the meeting.' See *Hal., Pea.* (HAIR), *Peg.* 2nd July, 1877. W. P."

2. "A NINE (= Nine). A farm labourer, born in the parish of Paignton, where he resides still, about 25 years of age, said to me to-day, 'The working-men hereabouts have their breakfast about *a nine* or half-past.' See *Hal., Nar.* 15th May, 1878. W. P."

3. "A PAID (= Paid). According to the *Torquay Times* of 16th June, 1877, the wife of a man, who had summoned some boys for robbing his garden, said to a witness in the Police Court, Torquay, on 11th June, 'I want to know who've *a paid* you for telling lies.' See *Hal., Nar., Web.* Torquay, 27th June, 1877. W. P."

4. "ABROAD (= To pieces). A day labourer, about 45 years of age, residing at Torquay, said to me to-day, 'The boy digged up a jaw with lots of teeth in en, and up with a hammer and hammer'd en all *abroad*;' meaning that he broke it *in pieces*. Torquay, 26th January, 1878. W. P."

5. "AGAIN (= Against). See 72.* See (AGEAN) *Bar.* (AGIN), *Bair., Dic., Gow., Hal., Jen., Nod., Pal., Pea., Pul., Rob., Rock., Ros., Wil.* F. H. F."

6. "AGONE. See 83. See *Hal., Jen., John., Web.* W. P."

7. "ALLIS'S (? = Holloway's). I was told to-day by a lad of the farm-labourer class, about 15 years of age, that an eminence on which we were standing, about three-quarters of a mile west of Paignton Church, was called *Allis's Hill*. This statement was also made by two women of the same class, about 25 years old, within half-an-hour after. The correct name, however, seems to be *Holloway's Hill*. 27th March, 1878. W. P."

8. "AM (= Are. 2nd person). An artizan's wife, long resident at Teignmouth, said in my hearing, 'You'm looking better than you did.' Common at Teignmouth. W. C. L."

9. "AM (= Are. 3rd person). A domestic servant, between 20 and 30 years old, born and resident at Teign-

* This reference is to the Provincialism No. 72; and so on in all other such cases.

mouth, said in my hearing, 'Give them some cakes. They'm hungry.' Common at Teignmouth. W. C. L." See *Gow., Peg.*

10. "ANY (Pronounced peculiarly). An artizan, about 40 years of age, born at Exeter, where he has always resided, said in my hearing to-day, 'If there eez *any* one present.' He pronounced the word *any* so as to rhyme with *zany*. 4th Nov., 1877. W. P."

11. "AT (= In). A servant girl, under 20 years of age, born and resident at Teignmouth, said in my hearing, 'She's *at* London.'

This is a very unusual form at Teignmouth, where the customary expression would be '*to* London.' W. C. L"

12. "AX (= Ask). I overheard the driver of an omnibus, at Torquay, say to the conductor to-day, with reference to a probable passenger whose movements were not active, 'Jack, run back and *ax* en ef eez gwain,' meaning, 'run back and *ask* him if he is going by the omnibus.' The driver was a native of South Devon, and about 40 years old. See *Bar., Bail., Bair., Dic., Hal., Jen., Nar., Nod., Pal., Par., Pea., Pul., Rob., Rock.* (AXINS, AX-UP), *Ros.* 5th October, 1877. W. P."

13. "BAUTCH (= A mistake or slip). A tradesman's widow, between 50 and 60 years of age, residing at, and a native of, Torrington, said in my hearing, a day or two ago, whilst she was knitting, 'I keep on making *bautches*.' See (BOTCH), *Web., Wri.* 30th May, 1878. G. D." See (BOTCHER and BOTCHINGESS), *Bail., (BOTCH), Dic., John., Rob.*

14. "BE (= Am). 'I'm just moved up a bit as I *be* now,' was said to me by a tradesmen born and resident at Teignmouth. Common at Teignmouth. W. C. L." See *Hal., Par.*

15. "BE (= Are. 1st person). A labourer's widow, born and resident at Teignmouth, said to me, 'That there air where us *be* is worse than the other.' Very common at Teignmouth. W. C. L." See *Gow.*

16. "BE (= Are. 2nd person). A labourer's wife, born and resident at Teignmouth, said in my hearing, 'Bide where you *be*.' Common at Teignmouth. W. C. L."

17. "BE (= Are. 3rd person). A labourer's wife, born and resident at Teignmouth, said in my hearing, 'What be 'em doing to you?' Common at Teignmouth. W. C. L."

18. "BED-TIE (= Bed-tick). A labouring man, a native of Ashburton, residing at Torquay, and nearly 60 years old, said to me to-day, when speaking of a substance not easily broken by hammering, on account of its elasticity, 'I may as well hammer on a *bed-tie*;' meaning a *bed-tick*, or, perhaps, a feather bed. See *Hal., Rock.* 16th February, 1878. W. P."

19. "BEGGARS. See 85. W. P."

20. "BESS. See 26. W. P."

21. "BETWEEN THE LIGHTS (= Twilight). A nurse, about 50 years of age, born and resident at Teignmouth, said to me, 'Yesterday, I was sitting *between the lights*,' meaning the *evening twilight*. W. C. L." See 40.

22. "BIDES (= Abides or Remains). A carpenter's wife, between 30 and 40 years of age, born and resident at Teignmouth, said in my hearing, 'Where you put him there he *bides*,' meaning *abides*. Common at Teignmouth. W. C. L." See (BIDE) *Bar., Bail., Clo., Fra., Dic., Gow., Hal., John., Nod., Par., Pul., Rob., Rock., Web., Ros., Will.*

23. "BITTLE-HEADED (= Thick-headed, Stupid). I overheard a middle-aged farmer, residing near Torrington, speak lately of another farmer as 'That bittle-headed old H—.' 30th May, 1878. G. D." See (BEETLE-HEAD) *Bar., Hal., John., Web., (BEEDLE-HEYDE) Pul., (BITLE-HEAD) Wil.*

24. "BLAZE (= To flare, to burn with an unsteady or waving light, as a candle does when exposed to a current of air). A working man (18) said to me to-day, 'The candle's sure to *blaze* when I put en there, but not when I put en anywhere else.' 17th May, 1878. W. P."

25. "BOOSHOP (= Bishop. Rhymes with *Push up*). An artisan (10) said in my hearing to-day 'The Shepherd and *Booshop* of your souls.' 4th November, 1877.

The same pronunciation of the word was used several times to-day, by a lad about 15 years old, born and resident at Torquay, when reading to me the titles of a series of books. 23rd May, 1877. W. P."

26. "BOUNCING BESS (= Valerian = *Valeriana officinalis*. Wil.). Whilst waiting for the ferry-boat to-day, at Portle-mouth, near Kingsbridge, I observed in the ferry-house garden, a solitary plant of Red Valerian, which seemed to have received much attention. As the plant is a very common one, almost a weed, about Torquay and Dartmouth, I asked the woman residing in the ferry-house, why it was so carefully tended, when she told me that it was there a scarce plant, and required care; and that it, as well as the white variety, was known as *Bouncing Bess*. She added, in reply to a question, that she had never heard it called *Valerian*. 30th July, 1878. W. P."

27. "BRATH (= Broth. Rhymes with *Path*). See 77. W. P."

28. "BRAWN (= Christmas Fire-log). The keeper of the Town-hall, Torrington, said to me to-day, previously to a Council Meeting in the hall, 'I'll put in a good Christmas *brawn* for you,' meaning that he would put into the fire grate a good Christmas *log of wood*. See *Hal., Pal., Rock, Wri.* 27th December, 1877. G. D." See (BRON, &c.) *Bar.*, (BRAN) *Jen.*

29. "CAB (= Clog. Rhymes with *Dab*). A gardener, born at Dean Prior, but now residing at Torquay, about 52 years of age, said to me to-day, when speaking of a certain kind of oil, 'It must be good oil, or it would *cab* the machinery;' meaning that it would *clog* the machinery. 24th December, 1877. A. R. H." See (CABBY) *Hal., Pal.*

30. "CARRIED (= Wandering or Delirious). The wife of a *labourer*, between 30 and 40 years of age, born in Cornwall, but resident in Devonshire the last 12 years, said to me, 'I've been *carried* in my head very much.' W. C. L." See *N. & Q.* 5th s., v. 466.

31. "CHAMBER (Pronounced peculiarly). An artisan (10) repeating, in my hearing to-day, the hymn containing the line, 'And in thy *Chamber* kneeling,' pronounced *Chamber* so as to rhyme with *Clamber*. 18th November, 1877. W. P."

32. "CLEANING (= Dressing. Attending to the toilet). A servant girl, about 20 years old, born at Torquay, where she has always lived, on being asked to-day 'Where is your

mistress?' said, 'She's *cleaning*;' meaning that she was in her room *dressing for a party*. See *Hal.*, (CLEAN) *Pea.*, *Pul.* 19th February, 1878. W. P."

33. "CLEDLAND (= Clayland). On passing a few cottages on 13th May, 1878, in the parish of Paignton, on the road from Marldon to Brixham, and about 1.25 miles s.w. from Paignton Church, I was told by a farm labourer, a native of the parish, about 25 years of age, that the site they occupied was usually called *Clayland*, but occasionally *Cledland*. On the maps of the district the name is printed *Clayland*. On passing the same spot to-day, some children told me that it was called *Cledland Pool*. There is a small *pool* on the side of the road nearly opposite the cottages. 17th May, 1878. W. P."

34. "CLEEVES (= Cliffs). A woman of the farm-labourer class, about 55 years of age, said within my hearing to-day to a person near Modbury, 'Have 'ee bin out to the *Cleeves*?' meaning the *cliffs* on the shore of Bigbury Bay. See *Hal. Nar.*, *Pul.*, *Rock.* 28th September, 1877. W. P."

35. "CRAP (= Crop). An innkeeper's wife, about 30 years of age, at Kingston, near Modbury, said to a customer within my hearing to-day, 'T'es no use to think of keeping pigs now. There'll be no *tetties* [= potatoes]; for 'tes a very bad *crap*,' meaning *crop*. 28th September, 1877. W. P."

36. "CREEPER (= Grapnel). A fisherman, about 60 years of age, resident at Bantham, at the mouth of the river Avon, South Devon, told me to-day that in that locality a *Grapnel* is called a *Creeper*. See *Hal.*, *Web.* 28th September, 1877. W. P."

37. "DABBERDASHED (= Soiled). A native of Ashburton, about 45 years old, still resident there, said within my hearing, when speaking of a book, 'If you let that child have it, it will soon get *dabberdashed*,' meaning *soiled*. J. S. A."

38. "DER. (= Er. The termination of adjectives, comparative degree). A domestic servant, between 20 and 30 years of age, said within my hearing, 'A tiny bit *tallder*,' meaning taller. W. C. L."

39. "DIG-AXE (= Beating Axe = Biddix). A native of Stokenham, South Devon, now an innkeeper at Prawle, in the adjoining parish, about 35 years of age, spoke to me to-day of a tool he called a *Dig-axe*. When he produced a specimen, it proved to be Mr. Marshall's BEATING AXE (*Trans. Devon Assoc.*, vii. 418), Miss Fox's BIDDIX (*Ibid.*, 419), the BEATING MATTOCK of Ashburton, and the BEATER of Torquay. (*Ibid.*, 438.) It is used in digging potatoes. 28th July, 1877. W. P."

40. "DIM (= Twilight). The following appeared in *The Western Morning News* of 9th February, 1878, in the report of proceedings in the Bankruptcy Court, Plymouth, the day before; a licensed porter being under examination as a witness:—

'How often did you take goods to Mr. Stanbury's?'

'Times out of number.'

'At what time?'

'In the *dim* of the evening.'

'Any other time?'

'No, always *between the two lights*.'

See *Hal.* 9th February, 1878. W. P. See 21."

41. "DROWNED (= Drowned). A woman of the labouring class, a native of Ugborough, but now resident at Plymouth, said to me to-day, 'Two men were *drowned* at Plymouth.' See *Pea.* 27th October, 1877. W. P."

42. "EEZ (= Is. Rhymes with *Bees*). See 10.

43. "ELLACUM (= Hollacombe). A farmer's wife, about 30 years of age, residing in Paignton parish, told me to-day that '*Ellacum* divided the parishes of Paignton and Cockington.' In the maps of the district the name is *Hollacombe* or *Hollicombe*. 17th September, 1877. W. P."

44. "EN TI (= Not I. Rhymes with *Deny*). An old quarryman, about 70 years old, whom I met to-day in the parish of Paignton, said to me, in reply to a question, 'Dun know, *en ti*,' meaning, 'Don't know, not I.' 17th March, 1878. W. P."

45. "FARNICUM, or VARNICUM (? = Ferny-Combe). A gentleman born and resident in Paignton parish, about 45 years old, told me to-day that a lane about three-quarters of

a mile north-west of Paignton Church was called *Farnicum*, or *Varnicum*. 23rd March, 1878. W. P."

46. "FAUT (= Fault. Rhymes with *Taught*). A man, from 50 to 60 years of age, of the humbler class of tradesmen, resident at Kingsbridge, whom I heard addressing an audience to-day, frequently used the word *Faut*, meaning *Fault*. See (FAUTIE) *Tus.*, (FAUGHTIE) *Hal.*, (FAWT) *Har.*, *Rob.*, *Ros.*, *Wil.* 29th July, 1877. W. P."

47. "FLOUR-MILK (= A mixture of Flour and Water. Pronounced with the accent on the first word). A labouring man, a native of Widdecombe, where he still resides, about 60 years of age, was cleaning out a thick muddy ditch, in September 1877, when he said to me, 'Maister, it would make *flour-milk*,' alluding to gruel made with flour instead of oatmeal. F. H. F."

48. "FRAUZY (= A relishing morsel. Rhymes with *Gauzy*). A native of Torrington, about 35 years of age, now residing at Exeter as a small shopkeeper, said within my hearing to-day, 'I'm going to have a *frauzy* of toasted cheese for supper.' 10th March, 1878. J. D." See (FROISE) *Hal.*

49. "FRIDG'D (= Worn by Friction. Rhymes with *Ridg'd*). A young lady born at Honiton, now residing at Torquay, about 16 years of age, told me to-day that if not protected, the gutta percha of submarine electric cables would soon be *fridg'd*; meaning worn by friction at the sea-bottom. See *Hal.*, (FRIDGE) *Har.*, *Hut.*, *Mar.*, *Pea.*, *Rob.*, *Ros.*, *Web.* 12th June, 1877. W. P."

50. "GIRDING (= Shingles). A domestic servant, about 22 years of age, a native of Hatherleigh, but now and for some years resident at Torquay, used the word *Girding* to-day in my hearing as the name of the disease called *Shingles* commonly, and *Herpes Zoster* by medical men. 14th July, 1878. W. P."

51. "GOIL (= Ravine, Hollow cleft, or Deep natural ditch). A cab-driver, about 40 years old, long resident at Teignmouth, said to me, "The ferns in the *Goil* are as tall as I be.' Common at Teignmouth. W. C. L." See (GILL, GHYLL) *Dic.*, (GILL) *Hut.*, *Mar.*, *Willan.*, *Web.*

52. GOING ALL ABOUT (= Lying down). A farm lad, about 17 years old, said, when speaking of clover and grass beginning to 'lie' with the wet, 'The grass is *going all about* the field.' J. S. A."

53. "GOODED (= Throve). A domestic servant (50) told me to-day that a pig, of which she was speaking, *gooded*; meaning that it grew, became fat, and was a source of profit. See *Cou., Hal., Pal., (GOODY) Wil.* 20th October, 1877. W. P."

54. "GRIT (= Grate). I overheard a shopkeeper, about 30 years of age, born and resident at Teignmouth, say, 'I've heard her *grit* her teeth lately.' W. C. L." See *Web.*

55. "GURRY (= Hand-barrow. Rhymes with *Hurry*). My gardener, born at Kenn, near Exeter, about 39 years of age, but for 20 years resident in Dartington parish, asking me to-day for an open space in front of a green-house, said 'it would come handy for the *Gurry* and plants.' On my asking him what that first word was, he replied, '*Gurry*. I reckon hand-barrow's the proper name, sir. It's a common word about here.' 30th October, 1877. A. C." See (GORRY) *Cou.*

56. GWAIN (= Going). See 12 and 77, *Bair., Hal., Pal. (AGWAIN) Par., Pul., Jen.*

57. "HAND - WRISTS OR HANDWRISTES (= Wrists). A labourer's wife, about 40 years old, born at Exmouth, but resident some years at Teignmouth, said to me, 'I was obliged to bind round his *handwristes* the other day.' Very common at Teignmouth. W. C. L." See *Hal.*

58. "HAVE (= Has). I overheard a labourer's wife, born and resident at Teignmouth, say, 'Ask if *he've* done my boots.' W. C. L."

59. "HAVES (= Has). A sailor's wife, long resident at Teignmouth, said in my hearing, 'She always *haves* the broth.' W. C. L."

60. "HE (= Him). A labourer's wife, born and resident at Teignmouth, said to me, 'I asked *he* if he knew any one who gave them.' Common at Teignmouth. W. C. L." See *Hal.*

61. "HE (= It). A fisherman's wife, between 30 and 40 years old, born in the parish of Bishopsteignton, where, and at Teignmouth, she has always resided, said, in answer to my question, 'How is your appetite?' '*He* is not very good, Sir. I feel sick to everything.' Habitually used at Teignmouth. W. C. L."

62. "HE (= She). A laundress, advanced in life, born and resident at Teignmouth, said to me, '*He*'s with pup, Sir.' W. C. L."

63. "HEKKETTY-POUND (= Hop Scotch). Whilst passing through the village of Beer, near Axmouth, to-day, I observed several children playing at a game which they told me was called *Hekketty-Pound*. The game was that called *Hop-Scotch* usually, but *Click-Bed* about Torquay (see *Trans. Devon. Assoc.* ix, 129); but neither of these names was known to the Beer children. See (HIKE OUT) *Bar.*, (HIKE) *Hal.*, (HICK) *Jen.*, (HECK-STROKE) *Pul.* 16th April, 1878. W. P."

64. "HEM ON HIS GARMENT (= Limit). A native of Totnes, aged about 70, said, of a forward person, 'He should have some *hem on his garment*.' J. S. A."

65. "HER (= It). A labourer's wife, resident at Teignmouth, said within my hearing, of a horse that had fallen in the street, 'Is *her* got up?' Habitually used at Teignmouth. W. C. L."

66. "HER (= She). A carpenter's wife, born and resident at Teignmouth, said to me, 'Particularly when *her* goes to sleep.' Habitually used at Teignmouth. W. C. L." See *Dun.*, *Fra.*, *Pal.*, *Park*.

67. "HIM (= It). An old woman, born at Kingsteignton, but resident at Teignmouth during many years, remarked to me, 'This here hand I'm forced to wrap *him* up.' In habitual use at Teignmouth. W. C. L."

68. "HINDER (= to Prevent; to Delay. Pronounced peculiarly). A man (46) whom I heard addressing an audience to-day, used the word *Hinder* frequently, but pronounced it so as to rhyme with *Kinder*, not with *Tinder*. 29th July, 1877. W. P."

69. "HIS (= Her). I overheard a young girl, resident at Teignmouth, say, 'We have got *his* kittens. Very common at Teignmouth. W. C. L."

70. "HOLE IN THE BALLET (= Deficiency). A native of Totnes, about 70 years old, said, within my hearing, of a person who spent too freely, 'I fear there will be a *hole in the ballet* by and by.' J. S. A."

71. "ITEM (= Trifle). A man (46) whom I heard addressing an audience to-day said, 'It's no use to run with every *item* to your neighbour;' meaning to trouble your neighbour with every *trifle*. See *Pul., Rock.* 29th July, 1877. W. P."

72. "KEEP AGAIN (= Keep Against). A shepherd, born at Widdicombe, Dartmoor, wishing his dog to keep back the flock within certain limits, addressed him within my hearing to-day, with '*Keep again*;' meaning *against*. 3rd May, 1878. F. H. F."

73. "KILLED A LITTLE PIG (= Contracted a debt with the intention of not paying it). A labouring man (18) said to me to-day, of one of his own class, 'I believe he *killed a little pig* before he left the town.' By questioning, I learnt that the man had left the neighbourhood *in debt*, intending to do so when he contracted the debt; and that the expression was common about Ashburton, where it had been introduced by Cornish miners. 6th December, 1877. W. P."

74. "LAKE (= Brook, Rivulet). A farmer, long resident in the neighbourhood of Totnes, said to me, 'This *lake* divides my ground from my neighbour's.' The so-called *lake* was a natural stream. W. C. L."

"A native of Stokenham (38), directing my attention to a small rivulet, said, "That *lake*, I think, parts the parishes of Chivelstone and Portlemouth.' 28th July, 1877. W. P."

"The rivulet dividing the parishes of Cockington is, on the map of the *Cadastral Survey*, called *Hollicombe Lake*. See *Hal., Pal., Pul.* 20th July, 1878. W. P."

75. "LEAD (= Pass, Move). The wife of an artisan, between 40 and 50 years old, born in Somersetshire, but resident many years at Teignmouth, said, within my hearing, 'Do it [the pain] *lead* down the back of your leg?' W. C. L."

76. "LEARN (= Teach). A man (46) whom I heard addressing an audience to-day, said, 'God will *learn* us what to do;' meaning *teach* us. See (LEARNING) *Bail., Fra., Gow., Hal., John., Pul., Par., (LARN) Park., Pea., Peg., Pul., Web., Wil.* 29th July, 1877. W. P."

77. "LEKKY BRATH (= Leek Broth). An artisan, about 40 years old, within my hearing, addressed a man of the same class, who was carrying a bundle of leeks, at Torquay, to-day, with 'Be gwain to have some *lekky brath*?' 17th September, 1877. W. P."

78. "LENGE (= Remain in contact with). A labouring man (18) told me to-day that the place in which he was working was so contracted that he had to *lenge* against the rock. See *Hal.* 6th September, 1877. W. P."

79. "LERRY (= Fog. Rhymes with *Berry*). A sailor, born at Branscombe, east of Sidmouth, about 58 years old, long resident at Torquay, said to me to-day, when speaking of the weather, 'I saw the *lerry* hanging in the bottom, and was sure 'twas a sign of southerly wind,' meaning that a *fog* was remaining in the valley. 24th December, 1877. A. R. H."

80. "LET IN TO 'T (= Strike it heavily). A labouring man (18) was to-day striking a stone heavily. At length his hammer flew off the handle, when he remarked to me, 'I thought something would give way when I *let in to't* like that,' meaning 'when I *struck it so heavily*.' 14th March, 1878. W. P."

81. "LIMB (= Any member or part of the body). A labourer's wife, born and resident at Teignmouth, said to me, 'His face is the best *limb* he's got.' Habitually used at Teignmouth. W. C. L."

82. "LONG (= Large). According to the *Western Times*, of 25th May, 1878, a member of the Exeter Town Council, said at a meeting on the 22nd of that month, when speaking of the decease of a gentleman of the city, 'A *long* family had also sustained a severe loss.' See *Gow.* 25th May, 1878. W. P."

83. "LONG-AGONE (= The distant past). A man (46) whom I heard addressing an audience to-day used the phrase *long-agone* frequently; meaning the distant past. 29th July, 1877. W. P."

84. "ME (= I). I overheard the wife of an artisan, long resident at Teignmouth, say, 'Nearly all the night *me* and my husband are up.' In common use at Teignmouth. W. C. L."

85. "MEASLEY BEGGARS (= Unsatisfactory persons). According to the *Western Morning News* of 1st October, 1877, a Torquay tradesman, the plaintiff in a case, informed the Judge of the County Court, on 29th September, 1877, that the defendant was 'one of the most *measley* beggars they had ever had in Torquay.' His Honour objected to the use of such language in Court, and characterised it as being such as would better become a public-house. W. P."

86. "MICHING (= Truanting). I heard an 'errand boy' of about 12 years old, say to another of about the same age, at Torquay to-day, 'Ah, young fellow, you be a *miching*,' meaning, 'Ah, young fellow, you are *truanting*.' See (MICHE) *Bar., Cou., Hal., John., Nar., Pal., Rock., Web.* 12th February, 1878. W. P."

87. MIND IN IT (= Thought of it). A labouring man (18), whom I reminded of a circumstance to-day, said, 'I ought to have thought of it before you spoke. I had my *mind in it* this morning,' meaning that he had *thought of it* in the morning. January 1, 1878. W. P."

88. "NIGHT TIMES (= At night). I overheard a domestic servant, between 20 and 30 years of age, born and resident at Teignmouth, say, 'I went home *night times*,' meaning *at night*. W. C. L."

89. "OFFERING FOR RAIN (= Indications of Rain). A labouring man (18), to whom I remarked this evening, 'It's raining smartly,' replied, 'It's been *offering for rain* all day,' meaning that there had been *indications of rain*. 8th Sept., 1878. W. P."

90. "OFFINGTON (= Alphington). See 95.

91. "OUDACIOUS (= Troublesome). A labouring man (18) said to me to-day, of a large mass of limestone, 'Tis the most *oudacious* thing I ever met with,' meaning that it had given him *much trouble*. 19th March, 1878. W. P."

92. "PIN (= Hip). A labouring man (18), speaking to me to-day of his rheumatism, said, 'It begins here in my *pin* [putting his hand on his left *hip*], and goes down to the bowing of the knee.' See *Hal., Pal., Pul., Wil.* 13th June, 1877. W. P."

93. "PLUFFY (= Spongy). A gentleman, born and resident at Ashburton, said to me to-day of certain asphalted roads, that they were *pluffy*; meaning *spongy*, not *firm under the foot*. See *Cou., Hal., Pal., Rock.* 19th November, 1877. W. P."

94. "PUSSSED (= Swollen. Rhymes with *Must*). A labourer's wife, about 40 years old, long resident in Bishops-teignton parish, but now at Teignmouth, said to me, 'I was so *pussed* up in my chest, I was ready to burst.' W. C. L."

95. "RAMES (= Bony remnants. The skeleton). A domestic servant, about 35 years old, a native of Alphington, or *Offington*, as she pronounced it, said in my hearing to-day, speaking of the small amount of cooked food in the house, 'There's only the *rames* of the fowl in the cupboard,' meaning the *skeleton*, with but little flesh on it. See *Hal., Jen., Pal., Pul.* 17th July, 1877. W. P."

96. "RUB (= Rob). I overheard an artisan, about 35 years old, describing to another man, at Torquay, to-day, a petty robbery which had just occurred. He ended by remarking, 'You know it's a shame to *rub* a poor widow.' Of course he meant *rob* her. 21st Oct. 1877.

"I recently heard an artisan (46) quote Malachi iii. 8, where the syllable *rob* occurs thrice. He pronounced it *rub* each time.

"A servant girl, 19 years old, born and resident at Torquay, finished a depreciatory description of a young woman to-day by stating that 'she even *rubbed* her own mother.' 12th Feb., 1878. W. P."

97. "RUNS ABOUT (= Covers a large area). A sailor (79), speaking to me to-day of a sunken rock, said, 'He *runs a good bit about*;' meaning, 'It covers a large area.' 24th Dec., 1877. A. R. H."

98. "SCUVVLE (= A weeding implement. Rhymes with *Shovel*). When passing through a field of mangold wurzel

to-day, on my way from Prawle to Portlemouth, near Kingsbridge, I saw two farm labourers, not out of their teens, at work with an implement I first thought a plough, but which the lads told me was a *Scurvle*. They added that they were *scurvling mangle*. One lad held the implement much as a plough is held, the other sat on, and guided, the horse which drew the implement, and they were thus engaged in weeding the mangold. See (SCUFFLE PLOUGH) *Par.*, (SCUFFLE) *Pea, Rock., Web.* 30th July, 1878. W. P."

99. "SHARPS (= Shafts). A labouring man, about 60 years old, said, in my hearing, at Modbury to-day, to a companion, 'My 'oss will draw a good deal better in *sharps*;' meaning in *shafts*. See *Bar., Hal., Jen., Pal., Par., Park., Pul., Wil.* 29th September, 1877. W. P."

100. "SHE (= Her). A labourer's wife, born and resident at Teignmouth, said in my hearing, 'I could send it on Thursday by *she*.' In very common use at Teignmouth. W. C. L." See *Hal.*

101. "SHORT'N (= Shortdown). I was told several times to-day, by persons varying from 20 to 50 years of age, all of the class of farm-labourers, that a hamlet in Paignton parish, nearly a mile north-north-west from the church, was called *Short'n*. On the maps the name is *Shortdown*. 20th March, 1878. W. P."

102. "SHUT OF (= Rid of). A gentleman, a native of Lancashire, but long resident at Torquay, said to me to-day, 'For several years I have had great pains in my head, and I can't get *shut of* them.' See *Clou., Gow., Hal., Par.*, (SHUT ON) *Ros., Web.* 2nd July, 1877. W. P."

103. "SKYLARKING (= Frolicking. Sporting). According to the *Western Morning News* of 2nd July, 1877, a youth, giving evidence at a Coroner's inquest, at Tavistock, on 30th June, 1877, said, 'The deceased was very fond of *skylarking* in the workshop.' See *Web.* 2nd July, 1877. W. P."

104. "SUDDENT (= Sudden). See 118, *Dic., Fra.*, (SUDDENTY) *Rob.* W. P."

105. "TAKING OFF (= Abating). A native of Stokenham (39) said to a man, in my hearing, to-day, 'The tides are

taking off now;' meaning that the highest spring tides had but recently occurred, and that the high water level was lower and lower every tide. 28th July, 1877. W. P."

106. "TETTIES (= Potatoes. Rhymes with *Jetties*). See 35. W. P."

107. "THAT (= So). I overheard a domestic servant, born and resident at Teignmouth, between 20 and 30 years old, say, 'A month ago he was *that* drunk that it was dreadful to see him.' W. C. L." See *Dic.*, *Hal.*, *Par.*, *Ros.*

108. "THAT THERE (= That). See 15, *Pea.*"

109. "THEM (= Those). A sailor's wife, resident at Teignmouth, said in my hearing, "You put all *them* things up there. Common at Teignmouth. W. C. L." See *Hal.*, *Ros.*

110. "THEM (= They). See 17. Common at Teignmouth. W. C. L." See *Peg.*

111. "THEY (= Those). A cab-driver, long resident at Teignmouth, said to a companion, as I was passing, 'Tom, will you open *they* doors?' W. C. L." See *Hal.*, *Pal.*

112. "THEY (= Them). A cab-driver (111) said within my hearing, 'I shan't tell *they* about it.' Common at Teignmouth. W. C. L."

113. "THIS HERE (= This). See 67. Very common at Teignmouth. W. C. L." See *Hal.*, *Pea.*

114. "TIE. See 18. See *Hal.* W. P."

115. "TIZZICK'D (= Tightness and wheezing of the breath. Rhymes with *Physick'd*). An artisan's daughter, between 30 and 40 years of age, born and resident at Teignmouth, said to me, 'He is Tizzick'd to his breath.' Common at Teignmouth. W. C. L." See *Gow.* (TISSICK), *Hal.* (TISICK), *John, Par.*, *Web.*

116. "To (= This, or During the). A nurse, from 50 to 60 years old, born and resident at Teignmouth, said to me 'We did all this for her *to* afternoon.' Common at Teignmouth. W. C. L."

117. "TO AND AGAIN (= Occasionally). A sailor's widow, about 50 years old, born at Newton, but resident many years at Teignmouth, said to me, 'My arm is better, but he swells *to and again*.' Common at Teignmouth. W. C. L." See *Par*.

118. "TO A SUDDENT (= Suddenly). A labouring man (18) said to me to-day, when speaking of the surface of a deposit of mud and stones, 'It goes down *to a suddent*;' meaning *suddenly*. 3rd July, 1877. W. P."

119. "TRADE (Used much in the sense of *Stuff*, in household *stuff*, sweet *stuff*, &c.) A labourer, between 40 and 50 years old, born in Bishopsteignton parish, whence he removed to Teignmouth a few years ago, said to me, 'There's this comes up [= is expectorated]. The same old *trade*.' W. C. L." See *Cou.*, *Hal.*, *Pal.*, *Par.*, *Rock.*, *Web*.

120. TURNAWAYS (? = Kennaways). Two women (7) told me to-day that a spot where three roads met, about three-quarters of a mile west of Paignton Church, and where a rivulet makes a very sudden and great bend or *turn* in its course, was called *Turnaway's Water*. About an hour afterwards, a gentleman's gardener, about 45 years old, told me it was called *Kennaway's Water*. 27th March, 1878. W. P."

121. "URGES (= Retches). A labourer's wife, between 30 and 40 years old, born and resident at Teignmouth, said to me, 'He doesn't throw up, but he *urges*.' Common at Teignmouth. W. C. L." See *Hal*.

122. "US (= We). I overheard a carpenter's wife, born and resident at Teignmouth, say, '*Us* went to Ipplepen. *Us* went all about.' Habitually used at Teignmouth. W. C. L." See *Hal.*, *Pal.*, *Ros*.

123. "WANGERY (= Soft, withered. The final y omitted, the *Wanger* rhymes with *Hanger*). A domestic servant, born at Torrington, but resident at Exeter, about 38 years of age, said in my hearing in April last, 'I sim they watercresses look all *wangery*,' meaning *withered*. 12th June, 1877. J. D." See *Hal.*, *Lock.*, *Pal.*, *Rock*.

124. "WERROW (= Hurrah). A native of Stokenham (39) said to me to-day, 'We say here, *Hip, hip, hip, Werrow*, not *Hurrah*.' 28th July, 1877. W. P."

125. "WHITE AS A HOUND'S TOOTH (= Very White). A gardener (29), describing the colour of an object to me to-day, said, 'It is as *white* as ever was a *hound's tooth*.' On expressing my surprise at the phrase, he added, 'It is whiter than any other dog you can pick out.' 3rd January, 1878. A. R. H."

126. "WOUND (Pronounced peculiarly). A domestic servant, born and resident at Torquay, about 19 years old, said to-day, 'Mother isn't well. She has a bad *wound* in her leg.' The word *Wound* was pronounced so as to rhyme with *Bound*. 14th February, 1878. W. P."

127. "WOVE (= Waved. Rhymes with Rove). A sailor (79) said to me to-day, 'I saw the duck, and *wove* to Bill Brown, who came and shot it;' meaning *waved* to Bill Brown, &c. 1st December, 1877. A. R. H."

128. "YONDER (= Farther. More distant. Adj. comp. Rhymes with *Ponder*). A woman about 50 years of age, when showing me the church of St. Saviour's, at Dartmouth, to-day, and speaking of two brasses, used the phrase 'The *yonder* one,' meaning The *farther*, or *more* distant one. 25th April, 1878. A. P."

(Signed) F. H. FIRTH, Hon. Sec. Com.

(Signed) GEO. DOE, Chairman, *pro tem*.

21st June, 1878.

FIRST REPORT OF THE COMMITTEE ON WORKS OF ART IN DEVONSHIRE.

FIRST REPORT of the Committee—*Mr. R. Dymond, Rev. Treasurer Hawker, Mr. R. J. King, and Mr. R. N. Worth—on the public and private collections of works of art in Devonshire.*

Edited by R. J. KING, Hon. Secretary of the Committee.

(Read at Paignton, July, 1878.)

ALTHOUGH some time has elapsed since this Committee was first appointed by the Devonshire Association, we are as yet unable to present such a report as the Association has a right to expect from us. The difficulty of procuring accurate notices of the works of art scattered throughout the county has been found to be considerable. Much desultory information has indeed been collected, including notes on single pictures and portraits; but it is felt that to prepare anything like a systematic report on the works of art contained in even a small part of Devonshire, requires considerable time. In our next report we hope to turn to good account much of the information already supplied to us, and, by giving full attention to a single district, to procure an exhaustive catalogue of all pictures and other works of art contained in it.

The present report consists exclusively of a catalogue of the works of art in public places and in public institutions in the three towns of Plymouth, Devonport, and Stonehouse, drawn up by Mr. R. N. Worth.

RICHARD JOHN KING, *Secretary.*

PLYMOUTH, DEVONPORT, AND STONEHOUSE.

The following is a list of the pictures and other works of art in public places or in public institutions in the three towns of Plymouth, Devonport, and Stonehouse, which call for record here. All the portraits are life-size, and of the

size known as kit-cat, unless otherwise specified. I commence with the pictures and works of art belonging to the Plymouth Corporation.

PLYMOUTH GUILDHALL.

SIR FRANCIS DRAKE, Portrait of; half length, painted on panel.

This picture was probably painted *in memoriam*. Drake is represented with his hand resting on a globe. In the upper left hand corner are the arms granted to him in augmentation—the fesse wavy between two pole stars, with mantling, as borne by Thomas Drake, not by Sir Francis, who quartered his new coat with his paternal device of the wyvern. In the upper right hand corner are the words, “*Ætatis suæ 53 An. 1594.*”

Underneath, in black-letter, we read :

“Sir Drake, whom well the world's end knew,
Which thou didst compass rounde,
And whom both poles of heaven onsaw,
Which North and South doe bound:
The stars above will make thee knowne,
If men here silent were:
The Sunn himself cannot forgett
His fellow Traveller.”

“Great Drake, whose shippe about the worlde's wide waste
In three years did a golden girdle cast,
Who with fresh streams refresh this Towne that first
Though kist with waters, yet did pine for thirst.
Who both a Pilote and a Magistrate
Steered in his turne the shippe of Plymouth's state.
This little table shewes his face whose worth
The worlde's wide table hardly can sett forth.”

The painter's name is not known; but it has some characteristics of the style of Nicholas Hilliard, portrait painter to Elizabeth. The artistic merits are by no means high.

CHARLES II., Portrait of; half length.

JAMES II., Portrait of; half length.

These two portraits, with one of the Earl of Bath, Governor of Plymouth for Charles II. and James II., were purchased by the Corporation in 1683 for £16 2s. There was also a portrait of William III. John Helliard, “the lymner,” Mayor of Plymouth, 1733–4, had £14 for drawing this picture “at large” with a gilt-carved frame, and repairing other pictures, 1696–7.

QUEEN ANNE, Portrait of; half length.

Painted by Nathaniel Northcott, jun., in 1704. He received £6 8s. for the picture, with a gilt frame, and varnishing sundry others.

GEORGE I., Portrait of; full length, robed.

Bought in London in 1737–8.

GEORGE II., Portrait of; robed, full length.

QUEEN CAROLINE, Portrait of; full length.

GEORGE III., Portrait of; seated, robed.

QUEEN CHARLOTTE, Portrait of; full length.

GEORGE IV., Portrait of, when Prince Regent.

By Hopner.

WILLIAM IV., Portrait of, in naval uniform.

PRINCE CONSORT, Portrait of the late.

After Winterhalter.

FLEMISH INTERIOR; artist and subject unknown; life-size; group at a table, partaking of some meal; a lady between two cavaliers.

This picture, which has considerable merit, was given to the Corporation by Sir William Elford, recorder from 1797 to 1833.

Associated with the new Guildhall are a number of statues, medallions, and emblematic carvings. The statues are of Edward I., the Black Prince, Henry VI., Drake, Queen Victoria, and the Prince of Wales; and there are medallion portraits of Raleigh, Frobisher, Hawkins, and Queen Victoria. These are mostly by Trevenen; but that of the Black Prince is by Hems. The emblematic carvings are by Boulton, and comprise, "Justice between Truth and Mercy;" "Fame rewarding Industry and Virtue;" Painting, Music, Sculpture, War, Peace, Religion, Architecture, Astronomy, Mechanics, Commerce, Plenty, Law. These works are mainly architectural in character. By the Guildhall will also stand a fine marble statue, by Stephens, A.R.A., of the late Alfred Rooker, Mayor in 1851-2, and in 1873-4, when the Hall was opened by the Prince of Wales. This statue is to be erected by subscription in the present year (1878).

COTTONIAN COLLECTION, PLYMOUTH PUBLIC LIBRARY.

This collection was presented to the Library by the late Mr. Cotton, on condition that a suitable place should be provided for its reception, and that it should be kept up for public use. It may be viewed on application to the librarian. It consists of a collection of prints, numbering upwards of 5,000; a number of books, chiefly relating to the fine arts; illuminated MSS.; examples of early typography; bronzes by Benvenuto Cellini, Zoffoli, and others; carvings by

Carlini; terra cottas by Rysbrach, Il Fiamingo, &c.; two hundred and fifty sketches by Claude, Rembrandt, N. Poussin, Domenichino, Rubens, Leonardo da Vinci, Le Brun, Correggio, the Caracci, Vandyke, Cipriani, S. Bourdon, Inigo Jones, Castiglione, Berghem, Vandermeer, Ruysdael, Zuccarelli, Carlo Maratti, and other celebrated masters; with three portraits by Sir Joshua Reynolds, a bust of whom has been placed in the Cottonian Room by subscription. The frieze of this apartment is formed of a series of casts from the Elgin marbles.

The Reynolds pictures are :—

REV. SAMUEL REYNOLDS, Portrait of, father of Sir Joshua.

FRANCES REYNOLDS, Portrait of (1755).

HIMSELF, Portrait of, formerly in the possession of the Dean of Cashel.

There are likewise in the collection—

JOHN ELIOT, of St. Germans, Portrait of; three-quarter length.

BRIDGET ELIOT, daughter of above, Portrait of; married Savery, of Slade, 1665.

Portrait of another member of the Eliot family, three-quarter length.

These pictures were originally from Port Eliot.

THE ATHENÆUM.

The hall of the Plymouth Institution at the Athenæum contains several pictures, and is ornamented with casts in *fac simile* from the metopes of the Parthenon, and of several notable examples of ancient statuary.

JUDGE GLANVILLE, Portrait of.

Artist unknown.

SIR FRANCIS DRAKE, Portrait of.

Painted by J. L. Colley.

SIR WALTER RALEIGH, Portrait of.

By J. L. Colley.

ALDERMAN JOHN FACEY, Portrait of.

Mayor of Plymouth 1749–50. At the back of the picture is a copy in autograph of his examination of Bamfylde Moore Carew.

JOHN NORTHCOTE, R.A., Portrait of.

By Ball, a Plymouth artist.

SIR JOSHUA REYNOLDS, Portrait of.

By J. L. Colley.

LIEUT.-COL. HAMILTON SMITH, F.R.S.; three-quarter length, seated.

By E. Opie.

WILLIAM JACOBSON, Portrait of.

By F. Lane. Presented by the late Mrs. Jacobson.

SAMUEL PRIDEAUX TREGELLES, LL.D., Portrait of, the well-known Biblical critic.

By F. Lane.

SIR WILLIAM SNOW HARRIS, F.R.S., Portrait of, the eminent electrician.

By F. Lane. Presented by the late Mrs. Jacobson.

LARGE ALPINE LANDSCAPE.

Painted by Sir R. P. Collier. Presented by the Artist.

N. T. CARRINGTON, Portrait of, the poet; small.

DR. MACAULAY, Portrait of, Master of the Plymouth New Grammar School.

By Ball. Presented by Mr. J. W. Grigg.

HENRY WOOLLCOMBE, F.S.A., Bust of, Founder of the Institution.

ST. ANDREW'S CHURCH.

REV. ZACHARIAH MUDGE, D.D., Bust of, Vicar of St. Andrew's 1731-69.

By Chantrey. Designed from a portrait by Reynolds.

ST. ANDREW'S CHAPEL.

The Altar Piece here is a Crucifixion, by Ball, a work of considerable power, but which can hardly be seen to full advantage.

PLYMOUTH DISPENSARY.

DR. YONGE, Portrait of.

By Northcote, R.A. Dr. Yonge was the founder of the institution in 1798.

PLYMOUTH EYE INFIRMARY.

DR. BUTTER, F.R.S., Portrait of; full length.

By Lucas. Dr. Butter was joint-founder with Dr. E. Moore of this charity.

CITADEL.

In the Citadel is a bronze statue of George II., attired as a Roman warrior, and laureated, the work of Robert Pitt; erected in 1728 at the expense of Louis Dufour, an officer in the Citadel. The loyalty of the donor is more remarkable than the art of the sculptor.

MOUNT WISE, DEVONPORT.

Here is a fine bronze statue of the late Field-Marshal Lord Seaton; erected by subscription in 1865. Sculptor, Adams; founders, Elkington.

DEVONPORT GUILDHALL.

QUEEN ANNE, Portrait of; full length, half life-size.

GEORGE I., Portrait of; full length.

QUEEN SOPHIA, Portrait of, full length.

GEORGE II., Portrait of; full length.

GEORGE III., Portrait of; full length, seated.

QUEEN CHARLOTTE, Portrait of; full length.

A curious history attaches to these pictures. George III. had several portraits painted of himself, and presented them to his most distinguished admirals. That given to the Earl of Dundonald was in some way sold, and being bought by the late Mr. R. Burnet, a native of Devonport, was given by him to the Corporation. Subsequently the family desired to obtain the picture again, and gave in exchange the present portrait, which had been given to Admiral Kempenfeldt, who was lost in the *Royal George*, and the others of the series. Most, if not the whole, of them were state paintings.

WILLIAM IV., Portrait of; full length, robed.

By Drake.

QUEEN VICTORIA, Portrait of.

PRINCE ALBERT, Portrait of.

These are copies, by F. Lane, of the well-known pictures by Winterhalter.

SIR JOHN ST. AUBYN, Portrait of; full length.

By Opie, R.A. Sir John was Lord of the Manor of Stoke Damerel, in which Devonport is situated.

EMBARKATION OF MARY BEATRICE, Queen of James II., at Gravesend.

Opie, R.A. A very fine group, life-size.

HOLY FAMILY.

Artist unknown.

The three last-named pictures are the gift of the St. Aubyn family. The last two were formerly in the Civil and Military Library.

VICE-ADMIRAL SIR EDWARD CODRINGTON. One of the first representatives of the borough; elected 1832; full length, in naval uniform.

By Paterson.

JOSEPH MAY, F.R.C.S., Portrait of. Thrice Mayor of Devonport (1870-73). Full length; robed.

By F. Lane. Presented to the town by subscription, in memory of Mr. May's great public services.

THE LITERATURE OF KENT'S CAVERN.

PART IV.

Edited by W. PENGELLY, F.R.S., F.G.S., ETC.

(Read at Paignton, July, 1878.)

WHEN, in 1868, I read to the Devonshire Association Part I. of *The Literature of Kent's Cavern* (*Trans. Devon. Assoc.*, vol. ii. pp. 469–522), it was my hope and intention to continue the subject until I had compiled and edited all that could be collected relating to the Cavern, whether in print or in manuscript, up to 28 March, 1865,—the date of the commencement of the exploration of the Cavern by the Committee appointed by the British Association—when a new chapter of its history may be said to have begun. I had, accordingly, the pleasure of producing a Second Part in 1869, and a Third in 1871. (*Ibid.* vols. iii. pp. 191–482; and iv. pp. 467–490.)

During the last seven years various friends have been so good as to send me memoranda, others have directed my attention to paragraphs in different works and journals, and sundry notices have presented themselves unsought in the course of my reading. The materials thus collected are here arranged in chronological order as a Fourth Part, to which are appended such *Notes* as seemed desirable, though it may be feared that they have grown to a somewhat formidable length.

To facilitate reference, a small numeral, enclosed in a parenthesis, is inserted in the text at each point requiring elucidation, remark, or correction, the numeral being also that of the *Note* in the *Appendix*.

MENTION OF THE CAVERN IN A DEED. 1659.

Mr. J. T. White of Torquay, when collecting materials for his *History of Torquay*, was allowed the privilege, by Sir L. Palk, Bart., M.P., of access to the archives, at Haldon House,

of the Manor and Estate of Torwood, in which Kent's Cavern is situate; and he has been so good as to inform me that he found a deed showing that to John Black, husbandman, were demised, December 22, 1659, "all those closes, fields, or pieces of ground, that is to say one piece called Middle Hill, one close called Kent's Hole (1), one close called Egnden, one close called Wildeswood, one close called Old Close, and the meadow called Bramble Meadow."

M. IN THE MONTHLY MAGAZINE. 1805.

The Monthly Magazine; or British Register, Part I., for June, 1805, contains a letter descriptive of Teignmouth and its neighbourhood, by a writer who appears to have resided in that town in the summer of 1804, and who used the letter M as his signature. The latter part of his letter contains the following account of Kent's Cavern:—

" The excursions by water in the vicinity of Teignmouth are numerous, either up the river Teing (*sic*), or in the channel. If to the eastward [so in the original, but *westward* must have been intended], it is a pleasant sail down to Torbay. Along the coast the voyager passes in view the pretty parish of Mary Church, situated just behind a high rock of limestone, which lines the shore nearly to the entrance of the bay; and the romantic retreat called the Barbican [so in the original, but *Babbacombe* must have been intended], in the corner of a small bay of that name. Near this is a quarry, where very fine marble has within these few years been found and worked with great advantage by some of the statuaries in Exeter. Below are the inexhaustible rocks that supply the eastern part of Devon with lime for all the purposes of building and agriculture. If a party land at the termination of these rocks, and ascends one of them, they are easily conducted to the famous cavern called Kent's Hole, whose situation has long attracted the curious subterraneous explorer. It is situated at the foot of a rock, and has two entrances, around which grow various plants, and among them the deadly night-shade. The largest and best entrance is about four feet high, and continuing about twelve feet, terminates in a chamber, with a descent leading on to the other vaults, sometimes the passage being only high enough for a person to creep along, suddenly leading into an apartment spacious enough to contain a hundred persons. There are five of these, but the largest is at the end of an entrance two hundred feet long, which barely admits a person going

through; this is called the Oven, and here we meet with a lake of water, which prevents a farther progress. The whole cavern is hung with petrification, glittering with a beautiful appearance when the party chances to disperse and throw their lights in various directions in a place where darkness is truly visible; for it is necessary that every one who ventures in should take a light to prevent accidents by foul air, &c. Attempts have been made to work the stones and spars, but they do not prove ornamental (2). . . . M." pp. 434-5.

THE ENCYCLOPÆDIA LONDONENSIS. 1812.

The Encyclopædia Londonensis, 1812, vol. xi., p. 674, has the following article, entitled Kent's Hole:—

"Kent's Hole, a curious cavern among the rocks to the east [so in the original, but *west* must have been intended] of Teignmouth, in Torbay (*sic*), Devon. It is situated at the foot of a rock." . . . The remainder of the article is copied verbatim from that in the *Monthly Magazine*, Part I., for 1805, pp. 434-5. See p. 142 above.

THE EDINBURGH PHILOSOPHICAL JOURNAL. 1825.

The Edinburgh Philosophical Journal, from January 1 to April 1, 1825, vol. xii., contains the following article:—

"*Hyæna Caves in Devonshire*.—Professor Buckland has lately examined two caves in Devonshire (3), in both of which he found, in a bed of mud beneath a crust of calc-sinter, gnawed fragments and splinters of bones, with teeth of hyænas and bears. There were no entire bones except the solid ones of the toes, heels, &c., as at Kirkdale, which were too hard for the teeth of the hyæna. They appear simply to have been dens, but less abundantly inhabited than at Kirkdale. In the same cave, Professor Buckland found one tooth of the rhinoceros, and two or three only of the horse," p. 409.

The foregoing paragraph is copied verbatim in *The Annals of Philosophy*. New Series, January to June 1825, vol. ix. p. 470.

REV. J. MAC ENERY. 1826.

Sir W. C. Trevelyan, Bart., has been so good as to forward to me a letter addressed to him by Mr. Mac Enery, and has kindly allowed a copy of it to be taken with a view to its incorporation in the present compilation:—

"My dear Sir,—I feel much obliged by your introduction of Mr. Bald. . . . I accompanied him to the cave, and

shewed him whatever was interesting, in a geological light, in the vicinity. Next day I introduced him to Mr. Cazalet, who has removed beyond Newton. . . . I made him a convert to Dr. Buckland's theory of the introduction of Bones, and gave him from the excavations a specimen or two of gnawed bones to shew his friend Dr. Fleming. He promises to avow his opinion at the next Wernerian meeting. I thank you for Dr. Fleming's article (4). I take in the journal, and had admired the ingenious and elaborate attempt to disturb the theories of Cuvier and Buckland. The first part of the dissertation appears to me far superior to the second, which is, indeed, sophistry and unsupported assertion throughout, and which will vanish before the Professor's powerful arguments.

I have hitherto endeavoured to keep my mind disengaged in my researches. The result certainly has been in favour of Dr. Buckland. The gnawed and broken condition of the bones, the prevailing number of the Hyæna's teeth and jaws furnish incontestable evidence of the truth of his account of the mode of their introduction. What will be his delight when he hears that I have found, ten feet below the surface, a perfect skull, with teeth entire, processes perfect, of a full grown Hyæna! One of the under jaws is missing (5). Perhaps you have seen the only one found nearly perfect, in Diluvial gravel near Rugby (6). Comparing mine with the plate of it, I find it an inch and a half longer, and larger in every way than that specimen. Every tooth, the smallest incisors are in their places. The surface of the teeth is a little worn, but the condition of the teeth and skull is beautiful and highly preserved. The cavities were charged with mud. There remains, however, the nice and delicate texture of the fibres, &c.

Besides this, I have the hind part of another Hyæna's skull, exhibiting the processes in great relief.

I have added considerably to my Elephants, Rhinoceros, Elks, Deer, and Bears. I have some teeth of the last of great size. A large Tiger's, perhaps Lion's, jaw now embellishes my collection.

"The open chamber, where you excavated so successfully, has been long exhausted. In my Idol Cave (7) I have made the most important discoveries which I am daily following up with ardour.

"Some plain account I intend to publish when the Professor returns. Mrs. Buckland purposes doing us the honor of a visit, when I hope to have collected abundant materials for her pencil.

"If I had my franking friends by me, I should wish to enclose a letter for Dr. B. If you be so good as to name, when you start, and where a letter is likely to find you, you would much oblige me, as I am anxious to acknowledge the Professor's presents and letter, and announce to him the progress of my labors. I continue the exclusive privilege of excavating.

"But if you are already on the wing, have the goodness to communicate to him the contents of this letter. It would give me pleasure to know when he is likely to return to England (8). . . .

"I remain, my dear Sir, most truly yours,

"[Signed]

"J. MC ENERY.

"Torquay, June 19th, 1826."

P.S. I have presented a collection to the Philosophical Institution of York (9). It is to be produced by Mr. Strickland. Plenty of gnawed bones, as many as would satisfy a Scotch palate (10), accompany the teeth. I beg to ask your opinion about my buying Cuvier's great work. Do you think the English translation will be a good one, or is the original preferable?

REV. DR. BEEKE, Dean of Bristol. 1826.

Sir. W. C. Trevelyan has also kindly sent me the following extract from a letter written to him by the late Rev. Dr. Beeke, Dean of Bristol, and dated, "Bristol, Decr. 6th, 1826":—

"Mr. Mac Enery has arranged his Kent's Hole collection very neatly, and had added a fine skull of an Hyæna, somewhat larger than the one which Scharf has engraved, and the upper part more perfect, but the lower jaw almost wanting. He appeared to think that very little remains worth digging for (11). He has prepared the materials for an account of the Cave, so far as his own observations extend, but waits for Dr. Buckland's advice and assistance, and no drawings have yet been made of the more important bones. I understand that Buckland has returned, but I have not yet had any letter from him."

SIR W. C. TREVELYAN, Bart. 1826.

On the 2nd January, 1878, I had the pleasure of receiving a note from Sir W. C. Trevelyan, enclosing the following *Memoranda* of his "second visit to Kent's Cavern," which he had just found on looking through his papers:—

"Torquay, 27th February, 1826. Saw Mrs. Cazalet's collection of bones from Kent's Hole. Very fine. Bear, Tiger (12), Wolf, Hyæna, Elk, Ox, Horse, Elephant, Rhinoceros, Flint knives. Mr. Mac Enery's bones. Very fine. Horse and Rhinoceros numerous. Roman coins (13).

28th. Spent 7 hours in Kent's Hole with four men, and found bones and teeth of Bear, Tiger, Rhinoceros, Elephant, Hyæna, Horse, Deer, Elk, and Flint knives under Tufa; *i.e.* Stalagmite from the side or wall of Cavern."

REV. D. M. STIRLING. 1830.

A History of Newton-Abbot and Newton-Bushel, and also Illustrations of the Antiquities, Topography, and Scenery of the circumjacent Neighbourhood, including Teignmouth, Torquay, and Chudleigh. By the Rev. D. M. Stirling, Newton-Abbot. Printed by W. F. Forord, 1830, contains the following notice of Kent's Cavern:—

"... Kent's hole ... is a natural cavern in a wood adjoining the road to Babicombe [*sic*]. The entrance is small, but a little way in from the aperture, the dreary intricacies become more spacious.

Some years ago five naval officers, without a guide, attempted to explore the recesses of this cimmerian shade, with only one candle, which was soon extinguished, and the *men of war* left to grope in the dark among the whimsical petrifications and incrustations which nature has secreted here. Having exhausted their strength, in fruitless efforts to get out of the dark abyss, they gave themselves up to despair. One, however, parted from the rest, and fortunately at length emerged into the light of day. Having procured guides and lights, he again entered the cavern, and after a good deal of search found his four companions seated round the margin of a limpid pool." pp. 145-6.

THE ATHENÆUM. 1859.

The following article, or review, appeared in the *Athenæum* of April 30th, 1859, pp. 574-6:—

"Cavern Researches; or, Discoveries of Organic Remains and of British and Roman Reliques in the Caves of Kent's Hole, Anstey's Cove, Chudleigh and Berry Head. By the late Rev. J. MacEnery. Edited from the Original Manuscript Notes by E. Vivian. (Simpkin, Marshall & Co.)" See *Trans. Devon. Assoc.* vol. iii. pp. 196-7.

"One of the most interesting caverns in the world lies within a lady's walk of that sunny watering place, Torquay. In a scene of geological disorder rises the mass in which Kent's Cavern is situated, half way between St. Mary Church and Torquay, and about a mile distant from each. Approaching from Torquay by a lane which terminates in a wooded valley, flanked on both sides by ridges of limestone, the cavern lies on the right. The way to it is over a stony gap, and winds through brushwood to its front. Grey masses of stone are scattered down the sides, and seem about to roll from the brow of the hill. Rugged and creviced surfaces, together with stratification, partly vertical and partly horizontal, seem to be proof of an igneous disturbance which at some remote period produced the cavern (14). But water succeeded fire, and the aqueous deposits of a later period line the cave with those fantastic percolations of water which are termed stalactites when they depend from the roof, and stalagmites when they protrude from the floor (15).

The favourite entrance to this cavern is simply a cleft in the rock, shaped like a reversed wedge, about seven feet wide at the bottom and five feet high. When the accumulated rubbish was cleared away from the entrance, the interior was found to rise rapidly, and to spread out into a spacious vault, while the rocky floor was polished as if by constant use (16). A regular and determined exploration was made by Mr. MacEnery, Chaplain at Tor Abbey, through what he names the upper gallery, and its lateral branches or sallyports. He then returned on his steps as far as the vestibule or sloping chamber, and, without stopping, advanced by the arcade into the cave at the extremity, from which he turned on the left into the region of the Bear's Den. Thence again returning by the oven, and retracing his steps by the arcade he traversed once more the sloping chamber in his way to the Wolf's Den, which forms its right branch, and terminated his labours in the grand vestibule or Hyæna's Den. Unfortunately, no sort of illustration makes this order of travel clear to the reader, and he must imagine it as he best can.

Ordinary tourists visit caverns for the purpose of admiring the sparry concretions (the stalactites and stalagmites) that frequently adorn them with the most singular shapes. Kent's Hole is not destitute of these natural ornaments, yet does not abound in them so remarkably as some other caverns. In the upper gallery, the concretions at the roof appear like clusters of cones, disposed at regular intervals, like the pen-

dants of a Gothic screen, connected by a transparent curtain of stalactite. While the mere tourist would admire the natural architecture, and heed nothing beyond its beauty, the geologist is chiefly attracted by it because it has rendered him the invaluable service of sealing down the floor hermetically, and preserving the precious deposits of animal bones beneath through many centuries, without permitting natural decay or accidental disturbance. How singular this result! Century after century of ceaseless droppings of water, charged with lime and impregnated with carbonic acid, have been necessary to weave a once aqueous, now solid and hard, covering for the gathered bones of many a beast of prey. What, in fact, is the whole but a rude sarcophagus of alabaster for the quadrupedal tyrants who once ruled these wild wastes, and held their carnivorous feasts within these walls! Slow, indeed, but sure, was the infiltration through every crevice of the roof of the lime-charged water, dropping it may be, only a few drops gradually upon the point of a protruding cone, but continually augmenting its sediment, flowing down the sides of the mound, spreading round its base, forming zone after zone, like circles in the water, until it was met by the concentric lines of adjacent cones forming and advancing in like manner. Finally the whole surrounding space became one continuous sheet of stalagmite, enveloping the bones, swathing them as tightly, and securing them as perfectly, as if they had been rolled in the mummy-cloth of Egypt, and committed to the recesses of a mighty pyramid.

Such was the Bear's Den in Kent's Hole,—the most interesting part for its organic treasures. So hard was the floor that attempts to penetrate it were abandoned in despair, until by following the cracks that traversed it like a pavement a flag was turned over, and groups of skulls and bones were found adhering to the stalagmite. Succeeding flags when upturned exhibited like interesting objects. The place was evidently an ursine cemetery—intramural, indeed, as respected rock walls, but extramural as regarded all habitations of town-loving man. Here the remains of the bear prevailed to the exclusion of all others. The bones retained their natural freshness, as if they had been derived from animals in a high state of vigour; while some of the teeth displayed dazzling enamel. Two skulls were buried in the stalagmite as in a mould, and were brought away in that state. The unbroken condition of most of those remains appeared to indicate that they belonged to animals that died a natural death in this spot during a succession of ages.

The most interesting part of the Cavern next to the above was the Wolf's Passage, at an opposite extremity. At this point roof and floor nearly met, and it was always regarded as the extreme limit of the Cavern, until by removing heaps of loose stones a passage was opened to a small group of chambers, probably untrodden before by the foot of mortal man. A column of spar connecting roof and floor being removed, it was found, to the explorer's inexpressible joy, to have covered the head of a wolf—'perhaps the largest and finest skull, whether fossil or modern, of that animal in the world.' Near it lay one of its under jaws entire,—the other could not be recovered even by the most diligent search. In the chamber beyond was a grotto hung with concretions of dazzling brilliancy. Returning to the site where the wolf's head was found, the stalagmite was discovered to be a foot and a half thick, excessively hard, marked by mixture of rolled rocky fragments, but in the interior moulding itself purely upon a mass of bones. These were so thickly packed together that no idea of their number could be given. They had suffered from pressure and had been impelled by violence into this narrow neck of the hollow. Some were even driven into the interstices of the opposite wall; others were piled in the greatest confusion against its sides. From this spot alone Mr. Mac Enery obtained nearly the half of his whole collection. Here he gathered some thousands of teeth of the horse and hyena, and in the midst of all were myriads of Rodentia. The earth was saturated with animal matter; it was fat with the sinews and marrow of more wild beasts than would have peopled all the menageries in the world.

In the "Cave of Rodentia" it was found that the remains and dust of this class of animals constituted the whole floor, and that they were agglutinated together by calcareous matter into a bony breccia or conglomerate. Not only had their tiny remains penetrated into every cleft and crevice of the rock, but they had even insinuated themselves into the chambers of the large bones. Here, then, were myriads of minute animal remains accumulated by the side of those of the elephant, rhinoceros and hyena in one common sepulchre. When a handful of dust was thrown into the air [*water*, in original. See *Trans. Devon. Assoc.*, vol. iii, p. 245] hundreds of teeth rose to the surface, and only in this way could they be collected. Land and water rats (*campagnols*), bats, weasels, and moles had all left innumerable remains on this spot. That they all existed and died here was made manifest by the condition of the remains, every part indicating pro-

longed habitation and peaceful death. Such a congregation of Rodentia is an *à priori* argument in favour of the existence of a *dépôt* of offal in their neighbourhood.

The distribution of animal remains over the whole cavern may be thus summarily stated. The ancient floor of the cavern was covered with the remains of the hyena, bear, and campagnol,—the two latter occupying its opposite extremities, the former occupying the remainder and the centre and the upper gallery (17). The Bear's Den was exclusively ursine, and thus resembles the caverns of Germany. The cave of the Rodentia was chiefly occupied by the campagnol. The great body of the cavern was occupied by the hyena, while in addition to the remains of its own species, which perished by a natural death, there were found remains of its prey, accompanied by other evidence of the conversion of the cavern by hyenas into a favourite den, resembling that of Kirkdale in Yorkshire, so well explored and described by Dr. Buckland in his *Reliquiæ Diluvianæ*. So much of Kent's Hole, which is by far the most interesting of the caverns in this district. The above description of one must suffice also for the other and less important caves mentioned in the title.

Such a cavern as this is not merely a study for the geologist, but offers a subject for descriptive poetry. Here is an outline of the successive scenes which might be graphically portrayed. The poem opens with a description of primeval convulsions and disorder prevailing over the whole district. Water has abraded the rocks for long ages, during which limestone and conglomerate have been deposited. But now the resistless power of fire has burst through these rocks, and a fiery rock (trap) pierces through the limestone, bends over it, and ultimately engulphs in its own boiling mass huge pieces of limestone and shale. By the action of elastic gases, and a consequent upheaval, a fearful rent is made in the rocks, and two opposite masses are hurled together, their summits meeting, and their lower extremities receding from each other, so that the opening to a tortuous and deeply severed interior is produced, and stands unclosed for succeeding ages (18). A long period of repose ensues, during which this cavern is becoming slowly furnished with nature's drapery, and crystal carpet, and varied ornaments. Now succeeds another scene. Beasts of prey roaring over this desolate and craggy wild find the cavern, and make it their dwelling-place. After a life of predatory warfare they perish, and leave their own skeletons on the floor, mingled with the

bones of those they preyed upon. Mangled bones of a multitude of herbivora and carnivora mark their residence and tomb, and around are scattered vast quantities of excrementary deposits. Now flows in, impelled from without, a mass of mud, sweeping along and confounding gnawed and disjointed bones, and skeletons lying thickly upon the floor. Rolled fragments of rock are also dashed into the hollows by tumultuous waves from the rising ocean, and with these, splinters of bone are forced into the softer clay, now become hard rock (19). Other animals find these recesses to be convenient haunts. The bulky bear has now discovered them, and the sly wolf and the ferocious hyena have made good a home in distinct chambers. In the perpetual night of these dismal hollows each wild animal follows its own instincts, and crunches its own prey, and howls or screams as it pleases, till all the hollow deeps resound again. But tiny creatures are not afraid to make an entrance here. Bats fly about in the darkest corners, land and water rats creep and run in numerous tribes, and countless rodents gnaw the bones of creatures which when living would have crushed them by a paw-stroke. Water is still ever percolating drop by drop, and minute by minute; concretionary cones are continually forming and extending; and the generations of animals are all finally wrapped in a semitransparent winding-sheet that spreads over the whole floors of the chambers.

Ancient as was the formation of the cavern, its chronology extends over an immensely-lengthened period, as measured by our arithmetic. And now within these rocky portals enters the crowning creature of all animal races—MAN. True, he comes but in savage state. He is a boar hunter, armed with flint-headed spear, and he follows his prey into the very recesses of the cave. There also he leaves tokens of his presence. Later still, others of his race succeed him, and kindle large fires and hold rude revels within shadowy haunts; and leave fragments of plain and ornamental pottery to attest their art and their orgies. The feasts of wild beasts have been succeeded by the feasts of men. The howl and the scream of the one are replaced by the song and the speech of the other. Other human visitors succeed these, and bequeath superior and richly-embellished pottery, beads of opaque glass, shell-necklaces, rings and amulets and crumbling pieces of skeleton. Now, sun-baked urns, fragments of breastplates, heaps of shells, and pin and bodkins of bone indicate the visits of Britons—perhaps Romanized Britons. Here, in one stalagmite, are fragments of a human cranium

and teeth. There are innumerable flints, chipped and edged, and shaped into wedges for various purposes, especially for arrow and spear heads. At this stage we seem to pause on human visitors.

Ages pass on,—Rome falls,—Britain rises,—England becomes one of the chiefest countries in the world, her sons cultivate all arts and sciences,—knowledge of the past and researches into antiquity distinguish even the high-born and noble of the land,—and now this cavern, the scene of so many and such extreme vicissitudes, is entered by a priest, accompanied by men who wield good steel and iron implements. Fired with antiquarian zeal, they tear up the floor,—they exhume the dead,—they open the graves of unknown quadrupedal generations. Under the glare of torch-light they rifle the long uninhabited solitudes of stalagmitic sepulchres. Skulls, jaws, and teeth are borne in triumph from the despoiled cave. The priest fills his museum with them. Lords, bishops, and commoners admire these *spolia opima*; but the priest also descends to his sepulchre; and now another despoiler succeeds him, the auctioneer. In one day, under successive descents of his hammer, the accumulations of tens of centuries are dispersed. A few silver coins secure possession of the bones of quadrupedal tyrants. Inestimable remains are divided into lots and assigned to forty different owners. Countless animals have been drawn to this central cave, and are now distributed to distant cabinets and museums, never to be gathered together in one place again. A partial exception occurs once. On an appointed day, a tall, slim, smiling professor enters a lecture theatre (20), and is received with plaudits. On the table before him are placed imperfect skulls, jawless teeth, and shattered and gnawed bones. The professor waves his wand, and revivifies beast after beast, and with them repeoples the cave, their primeval palace. After the lecture, would-be-wise men and beautiful women descend to the table, and jaws once reeking with the blood of mangled prey are handled by gloved hands, and touched by fair fingers, and admired by sparkling and speaking eyes. This is the last attempt at a restoration and resurrection of these cavernous organisms. They now return to their places in museums, are ranged upon orderly shelves, inscribed with unpronounceable names, and are gazed on by the descendants of those Britons who once feasted upon their undisturbed tomb. In their new resting-place they will probably remain unmolested until that day arrives when the earth shall experience another convulsion and a last rending—

when the bones of priests and professors, fair women and forgotten men, shall be mingled with the dust of bears, hyenas, and beasts of all orders, by the common and final catastrophe which awaits all living things, and even this great globe itself! Are there not themes enough for poetry here? Kent's Cavern might be a cavern in Parnassus, if only there were a poet to enter it."

THE REV. JOHN KENRICK, M.A., F.S.A. 1861.

- On May 8th, 1861, the following paper, on "*The Rev. Mr. M'Enery's Researches in the Bone Cave of Kent's Hole, Torquay and their Relation to the Archæology and Palæontology of Britain, by the Rev. John Kenrick, M.A., F.S.A., of York,*" was read at Leeds to the fifty-sixth Meeting of *The Geological and Polytechnic Society of the West Riding of Yorkshire*, and published in the *Proceedings* of that body. Vol. iv. 1859-68, pp. 150-165:—

"Although the scene of Mr. M'Enery's researches is very remote from Yorkshire, the value of his discoveries is not confined to the locality in which they were made.

No higher testimony to their importance can be needed than that of Professor Owen, who says, 'Perhaps the richest cave depository of the fossil bones of bears hitherto found in England is that called Kent's Hole, near Torquay. . . . It is to the assiduous researches of the late Rev. Mr. M'Enery that the discovery of the various and interesting fossils of this cave is principally due.' [*Brit. Foss. Mam., &c.*, p. 103.] Mr. M'Enery was the chaplain of the old Roman Catholic family of Carey, of Tor Abbey, and he has left an interesting account of the circumstances which led him to engage in those investigations, which have connected his name with the Archæology and Palæontology of Britain. . . .

This limestone, which is found in various parts of South Devon, as far west as Plymouth, everywhere abounds with caves, some of which, as at Oreston, Brixham, and Torquay, have furnished both archæology and palæontology with facts of profound interest. Kent's Cavern—the discoveries in which are connected with the name of Mr. M'Enery—is at the distance of about a mile and a half eastward from Torquay, and does not differ materially in its structure from the caves which characterize limestone districts. Like these, it has a floor covered with stalagmite, while stalactites depend from the roof. These appearances had attracted visitors long before flint implements or the fossil bones of extinct animals

had become objects of research. To cut their names in any remarkable spot, which they may happen to visit, is an ancient custom of our countrymen, and Kent's Cavern bears testimony to its existence for at least 250 years. Names and dates have been cut in the stalagmite, and the earliest of those which is legible is of the year 1615 (21). But scientific research into its contents did not begin till 1824, when it was explored systematically by Mr. Northmore, an ingenious but eccentric man. . . . In the course of his exploration of the cave, Mr. Northmore found a tusk of a hyæna, a metatarsal bone of the cavern bear, and about twenty or thirty other teeth and bones. Mr. [now Sir W. C.] Trevelyan speedily followed Mr. Northmore, and obtained results of a more scientific character. He carried with him to London specimens of the teeth of rhinoceros, hyæna, and tiger, with jaws of the bear and fox; and engravings of them were executed by the lady who subsequently became the wife of Dr. Buckland. . . . It was at this point that M'Enery took up the investigation, which he carried on for several years, and, as the result of which, made a large and valuable collection of fossil remains and works of art. It was his intention to have published a memoir, illustrated by numerous plates; but geology was not then so popular as it has since become, and perhaps his own name was not sufficiently known in the scientific world. At all events, he was compelled to renounce his plan, after making two appeals for subscriptions. At his death, his collections were sold by auction, and dispersed. The MS. of his intended work was included in a lot at the sale, with sermons and other papers; and for many years it remained unnoticed by the purchaser, and was supposed to be lost. It has, however, come to light, and has been recently published by Mr. Vivian (*Cavern Researches, by the late Rev. J. M'Enery, F.G.S., Edited from the original M.S. Notes, by E. Vivian, Esq., 1859*); and from it the account of his researches is derived. It appears, from Professor Owen's work on *Fossil Mammalia*, that some of the most rare and valuable of Mr. M'Enery's specimens have found their way to the British Museum. [*Op. cit.*, p. 103].

The cavern has long been completely cleared of every curiosity, whether of art or nature, that could be removed; but it is the opinion of a very competent judge, Mr. Pengelly, that much remains to be explored, if only a sufficient sum could be raised for the purpose. The cavern goes on expanding as it descends, and attains a greater extent towards the bottom of the hill. It branches out into many recesses,

which, from the remains found in them, have been called by Mr. M'Enery the *Bear's Den*, the *Wolf's Passage*, the *Cave of Rodentia*, the *Cave of Inscriptions*; but as no plan accompanies his work, it would be useless to attempt to give an idea of their relative position. A more important point, as throwing light upon the history of its contents, is the vertical order in which they succeed each other. According to Mr. M'Enery, the ancient rocky floor of the cavern was inhabited by bears and hyænas, as well as by rodentia, such as water-rats and shrew-mice, but chiefly by hyænas, who left in it, not only their own bones and other traces of their existence, but those of animals which they made their prey, in this respect closely resembling Kirkdale (22). He supposes that, whilst it was in this state, a body of mud and gravel rushed into it, covering the bottom, and enveloping in it the organic remains which lay scattered about. This appears to have come from the land, not from the sea; for it contains no marine exuviae, but fragments of the formations of the adjacent country, and rolled pebbles of the granite of Dartmoor. But, though it entered with a violent rush, the agitation did not continue long; the bones bear no marks of any long friction. The masses of rock and heavier bones sunk to the bottom; the lighter remained in the upper part (23). No similar second irruption of mud and gravel could be traced; and as Buckland's *Reliquiæ Diluvianæ*, recently published, had given currency to the opinion that all such phenomena were attributable to one great historical event—the deluge—the mud was called by him diluvial, and everything of subsequent age postdiluvial.

After the quiet settlement of the mud, the cavern appears to have been inhabited; for it is on the surface of this sediment, slightly adhering to it, but not incorporated with it, that the flint implements were found which attest the presence of man. They are of three different kinds, corresponding with the varieties observed in other places; some, M'Enery calls arrow and spear heads; some, knives or chisels; some, wedges for splitting wood. The regularity of their form, he observes, precludes the supposition of its being accidental. In the cavern of Kent's Hole they are never found, according to Mr. M'Enery, more than three inches deep in the diluvial mud, they bear no mark of abrasion by friction in water, and consequently they were not brought in along with the mud. Mr. M'Enery argues that they could not have been introduced through the stalagmite, which lies above the diluvial mud, by any excavations

for ovens or pits, as had been conjectured by Dr. Buckland, who was unwilling to admit that the position in which they were found was the original one. Mr. Vivian adds, that the Torquay Natural History Society had found the flints below stalagmite so hard and thick, that without quarrymen's tools it could not have been broken up; and therefore it was in the highest degree improbable that those who possessed only implements of flint should have made excavations in it. Some of those in Kent's Cavern, according to Mr. M'Enery, had one end in the diluvium, and the other sticking in the crust of the stalagmite which lies over it. But, according to his repeated assurances, the flints are never found at the bottom of the cave, or mixed with the bones of the hyænas and bears in the lower part of the mud; though, as he argues, if they had been washed down from the mouth of the cave, they would, from their superior gravity, have sunk even lower than the bones. He considered the cave to have been inhabited by a tribe using the flint implements, after the deposition of the diluvium, and *before* the deposition of the stalagmites; and regarding the diluvium as the production of Noah's flood, he was naturally surprised that there should be traces of human population in this distant part of the world so soon after that event. No human bone has ever been found in the mud, the upper part of which contains the flints. . . . Such traces, however, are found in the stalagmite which immediately overlies the diluvial deposit—burnt bones and charcoal; and Mr. M'Enery distinctly says that these are not lodged in any artificial hollow, such as might have been made at a subsequent time, but simply repose on a stratum of stalagmite, which has itself been covered by a second stratum, to use his own expression, 'Like substances deposited on a grave stone, and subsequently overlaid by a similar slab.' At this depth, however, no decidedly human remains, no pottery or beads, have been found (24).

Higher up again in the stalagmite deposit, human bones are met with in connection with flint implements and coarse pottery, and even metallic remains. In one place an iron spear head was found, and the jaw of a boar, which may have received its death wound from the weapon; and it is probable that, like the cave at Brixham (25), it was visited, and occasionally tenanted, during the time of the Romans, who had a station hard by on the down above Babbicombe (26). Mr. M'Enery was at first inclined to think that the human bones and the flint implements, through all depths, were contemporaneous; but he subsequently abandoned that opinion,

and the final result of his researches is the classification of the deposits in the following order, proceeding downward :— Near the surface, black pottery, with traces of the lathe, beads, and bone pins, and other articles belonging to the British or Romano-British periods; lower down, arrows, spear heads, and stone axes, among fossil teeth and bones of herbivorous and carnivorous animals, but no pottery nor other work of art; lowest of all, the diluvial bed, containing merely animal remains, with the exception of the flints at its upper surface.

Such are Mr. M'Enery's statements respecting the succession of deposits in the Cave and his inferences from it. It must not be concealed, however, that a geologist of eminence, Mr. Austen, in a memoir in the 6th volume of the *Transactions of the Geological Society* [Series 2], gives an entirely different result of his researches. He says, 'Human remains and works of art, such as arrow-heads and knives of flint, occur in all parts of the Cave and throughout the entire thickness of the clay: and no distinction founded on the condition, distribution, or relative position can be observed, whereby the human can be separated from the other reliquiae [*Op. cit.* p. 444]. Mr. Austen also thinks that the bones of the elephant and rhinoceros were washed into the Cave, along with the flint implements, from no great distance; remains of these animals being found in many of the valleys of South Devon. These discrepancies render it particularly desirable that a fresh examination should be made by men free from preconceived opinions on either side. . . .

Mr. M'Enery's MS. is very fragmentary, rather materials for a memoir than an orderly treatise, so that it is difficult to reduce his scattered facts and remarks to a distinct arrangement; and the dispersion of his collection prevents our deriving from them an elucidation of his MS. He may even seem to contradict himself, when different portions of his journal are compared together. The fact appears to be that he wavered in his own conclusions. An eminent geologist (27) who knew him well, says, 'M'Enery had no doubt whatever as to the occurrence of flint implements in the lower accumulation with the extinct animals; this, I know, from repeated conversation with him. But Buckland would never hear of it: hence the confusion in his views, when he came to write his account of the cave and its contents.'

He speaks of the flint implements found in the lower deposit as *rude* compared with those of the upper; but there is no specific account of the difference. From the drawings of

two of them, which are of larger size than the others [*Cavern Researches*, Mr. Vivian's Ed., Pl. T.], they appear to have approached in form to the *hatchets* of Abbeville and Amiens; but no account is given of the part of the cave in which they were found, so that we cannot derive from them confirmation of the conclusion suggested by other collections of flint implements, that two distinct æras can be traced in the history of their use. . . . Mr. M'Enery's account leads us to believe in the existence of a difference, but does not enable us to decide on its amount. The prehistoric age of Britain has been divided into the Stone Period and the Bronze Period; but that a subdivision of the stone period itself is required is a conclusion which has latterly forced itself upon historical inquirers; and, in the absence of written records, it is only to material antiquities that we must look for the means of deciding the question. The rate of the deposition of the stalagmite appears, in Kent's Cave, to have been subject to irregularities which preclude the possibility of founding upon it any calculation of chronology. At present the deposit has ceased (28).

There is something truly formidable in the list which Mr. M'Enery gives of the ferocious animals, whose teeth remain to attest their powers of destruction. The elephant and the rhinoceros appear as peaceful creatures among the gigantic specimens of carnivora, to which Kent's Cavern served as a den or a sepulchre. Professor Owen considers that to the great extinct tiger, bear, and hyæna, of the caves, was assigned the office of controlling the members of the richly developed order of the herbivorous mammalia, and that with them was associated in the work a feline animal, as large as the tiger, and, to judge by its implements of destruction, of greater ferocity. From the form of the teeth of this animal, each movement of the jaw combined the power of a knife and a saw, while the apex, in making the first incision, acted like the two-edged point of a sabre. The backward curvature of the full-grown teeth enabled them to retain, like barbs, the prey whose quivering flesh they penetrated. [See *Brit. Foss. Mam.* p. 181.] Of this terrific animal, which Professor Owen has named *Machairodus latidens*, Mr. M'Enery discovered several canine teeth in Kent's Cavern. The teeth of the fossil hyæna, from the same place, proved it to have been larger than the largest known species of tiger. The great cave bear, judged by the length of his canine teeth, found there by Mr. M'Enery, must have equalled the size of a large horse. If man were the contemporary of

these tremendous animals, he must have needed all the advantage which reason gives him to hold his own against them, armed only with flint hatchets, spears, and arrows.

But was man really contemporary with them, or with the gigantic elks, the *Cervus Megaceros* and *Cervus Strongyloceros*, whose shed antlers have been found in Kent's Cave, and against whom his flint implements would have had a better chance? From the conflicting statements of Mr. M'Enery and Mr. Austen, no decisive conclusion can be arrived at, yet scientific men are evidently inclining to the admission that man has been the contemporary of *some* extinct species."

MR. W. MINIFIE. 1873.

In 1873 I was favoured with a letter from Mr. Minifie, Professor of Mathematics at Baltimore, Maryland, U.S.A., and believing such parts of it as are calculated to throw light on the character of Kent's Cavern immediately before scientific investigations were first made in it, to be worth preservation, I have decided to give them a place in this compilation :—

"Baltimore, Md., United States Ame.,
November, 1873.

MY DEAR SIR,—

You will no doubt feel some surprise at being addressed so familiarly by a perfect stranger . . . but I have been accustomed for many years to read your name . . . in connection with reports . . on Kent's Cavern—a place I was familiar with about half a century ago, and in which I have passed many a pleasant evening with my young acquaintance, years before Mr. McEnery began his excavations. .

. My earliest recollection of Kent's Cavern, or Kent's'-ole, as it was usually called, was as the scene of Pisky frolics. . . . These were related by a neighbour, together with ghost stories or 'Whishnesses.' . . The stories of the Kent's Cavern Piskies were much the same as those related of slatternly housemaids who failed to sweep the kitchen hearth before retiring to bed; they were pinched black and blue; and so they would serve any one who misbehaved in the Cavern. If visitors took a lunch with them, and partook of it on their first going in, leaving the fragments lying about, they would find everything swept up clean on their return; with numerous other particulars, not omitting the origin of the name, which she related, as well as all the

other stories, in the rustic vernacular, as how a gentleman lost his dog in the 'ole,

'an' 'ee went, an' 'ee went,
Until he coom'd out
In the county of Kent;"

an' when 'ee coom'd out 'ee 'ad narra 'air on the top 'o 'ees back, the piskies 'ad pull'd mun all out to make en go; an' that's why they call'd en Kent's-'ole.'

About 1822, I became an inmate of the family of the late Mr. Jacob Harvey [of Torquay], with whom I remained five years acquiring the art and mystery of a carpenter and joiner. Shortly after my arrival I was introduced to the Cavern; at that time it had a paling gate to keep cattle out, but was oftener open than closed, and free for all to come and go as they pleased. We youngsters often made up parties to go there, but went prepared to crawl wherever fancy led. I remember on one of those occasions getting in a particularly tight place; I saw quite a handsome stalactite in a narrow opening, and tried to get it; there was not room to crawl, so I laid down and wriggled and wriggled until I could get no farther; with my arms stretched out in front, a hammer in one hand, a candle in the other, and the specimen about a foot beyond my reach suspended from the roof of the miniature dome with its glistening tip sparkling like a diamond in the rays of the candle. Having had the free use of the Cavern for so many years, people were much dissatisfied at its being locked up; much grumbling against Sir Lawrence Palk and Mr. McEnery was the consequence; I believe the gate was several times broken open. In the summer of 1825 or 6 a party of four of us wished to visit the Cavern. I endeavoured to get the key from Mr. George Pearce [the Guide], . . . but could not find him; so we walked out in hopes to find the gate open. When we arrived there, I ran against the gate with both hands, and pushed it open so easily I did not know whether it had been locked or not. On examination with a light, I discovered that I had bent the slender part of the bolt, which had been entirely unsupported; the lock had been put on in a very unworkmanlike manner; it was a "stock-lock," and projected several inches beyond the outside paling of the gate. Very little damage was done; I could have repaired it in ten minutes.

We proceeded to make our visit. Not very far from the entrance we came to Mr. M'Enery's *first* excavation, I think it was in the large chamber; the opening, to the best of my

recollection, was about ten or twelve feet in diameter, and about three feet deep, passing through the stalagmite to the earth below; about a peck of fragments of bone, &c. [were] laid on one side, which we did not disturb; but we held around the excavation, what our western people would call, an 'Indignation Meeting,' and unanimously came to the conclusion 'that it was a *very great shame* to spoil our beautiful dancing floor for the sake of a few old bones.' . . . "

TORQUAY AND TOR DIRECTORY. 1846.

The following contributions appeared in the *Torquay and Tor Directory* of 14th August, 1846:—

"FOR THE ENTRANCE OF KENT'S CAVERN.

"Ossa latent antro, laterique induruit humor
Guttarum: gelidæ fons micat intus aquæ.
Hæc oblita diu, sæcli monumenta prioris
Quæ potiora, precor, fata dedere tibi—
An Deus in causa viresque mamabalis undæ?
An placet hæc olim lustra fuisse feris?

"Torquay, August 12th, 1846."

"HAVE HYÆNAS OR ANCIENT BRITONS THE BEST CLAIM
TO KENT'S CAVERN, TORQUAY?"

"One great Professor still supposes,
Hyænas, dragging by their noses,
Horses and Bullocks, Sheep and Deer,
To crack their bones, and gnaw them here.

"Another says—Beneath this ground
Fragments of British knives were found;
Proof of a kitchen 'mongst these stones,
Where Britons cook'd, carv'd beef, pick'd bones.

"Tor's wond'ring fishermen to me
Describ'd their simple theory—
Not knives, nor fangs imbrued in blood,
But Scripture's life-destroying flood.

"August 10th, 1846."

"KENT'S CAVERN.

"The investigation in Kent's Cavern, under the direction of the Torquay Natural History Society, will be resumed in a few days, with the view of determining, if possible, the original formation of the Cave, the mode and æra of the introduction of its fossil remains, and the date of its occupation by human inhabitants. The plan proposed is to lay open a portion of the stalagmitic floor, which has never yet been broken, in order to ascertain whether the flint knives and relics of human art which appear to have been found intermixed with the fossil bones of extinct animals, are really

contemporary with them. The water at the extremity of the cavern will also be temporarily drawn off (29), in hopes of discovering traces of the Druidical rites, which are supposed to have been celebrated in this portion of the Cave, where sepulchral urns and other most interesting relics of high antiquity were found by Mr. McEnery (30). A similar opportunity for exploring the cavern may not again occur, as permission is very properly withheld by the proprietor, Sir L. V. Palk, unless on special occasions, for scientific purposes. An extensive and rare collection of fossil remains, principally of extinct varieties of the Hyæna, Bear, Rhinoceros, Elk, and other genera, together with several interesting antiquities, has already been obtained, and deposited in the Museum of the Society. . . ."

The following Contributions appeared in the same paper of 28th August:—

"CAVERN EXCAVATIONS.

"Curs'd be the man who moves these stones,
Said Avon's bard, which guard my bones.
Should excavators disinter
A Druid's bones, this must infer
His curse: and, since the bear so close is,
The Druid's creed, metempsychosis,
For bodies, as for souls, may do;
Explorers into bears' skins go.
All right, quoth Buckland, claws and snout
Can bore—might let cave waters out!

"August 17th, 1846."

"KENT'S CAVERN.

"Within cool waters rise. In deepest night
The arch constructs its graceful stalactite;
The floor its columns—guardians of the stores
Of bones of beasts unknown to Devon's shores.

"August 24th, 1846."

KENT'S CAVERN SUB-COMMITTEE OF THE TORQUAY
NATURAL HISTORY SOCIETY. 1846.

The following article appeared in the *Torquay and Tor Directory* of 6th November, 1846:—

"REPORT OF THE SUB-COMMITTEE APPOINTED TO SUPERINTEND
THE EXCAVATIONS IN KENT'S CAVERN (31).

"The spot at which the investigation commenced is distant about thirty yards from the lower entrance of the Cavern (32), at the end of a slope leading into a recess which Mr. McEnery named the Wolf's den, on the right of the main passage (33). The ground had been already broken by former explorers, and their excavations were found to have extended so far in

every direction underneath the stalagmitic floor that after removing a considerable quantity of the earth, to reach new ground, the work was discontinued, as it was found that their progress had been arrested by large masses of rock, which rendered all further excavations in this part of the cave impracticable. Several teeth and fragments of bone, with three flint knives, were found in the soil which had previously been moved. The general section of the cavern was here shown to great advantage,—the successive depositions of which were as follows:—

“1st. A thin coating of the red marl spread over the floor of the cave by modern visitors, the marl having been thrown up from below during the excavations.

“2nd. A layer of dark mould, varying in thickness from half an inch to a mere stain, containing large quantities of burnt wood or charcoal, with muscle (*etc*), limpet, and other shells, recent bones, and several articles apparently introduced by the early British inhabitants, as fragments of pottery, beads, &c. &c. This is what Mr. McEnery denominates ‘the Charcoal streak’ (34).

“3rd. A stratum of stalagmite, consisting of crystalized carbonate of lime, precipitated from the water which percolates through the roof, forming corresponding stalactites above, and which trickles, during wet seasons, over the floor of the cave. This formation varies in different parts from about four feet to a few inches; in this section it is about 18 inches of nearly uniform texture. It rests upon a bed of loam and rocky detritus, into the crevices of which it has been infiltrated. No organic remains of any description have ever been found in the stalagmite (35), and the slight streaks of earthy matter, which may be detected in some parts, are only such as would have been produced by the discoloration of the water from the roof by heavy rains. It affords no evidence of the cave having been inhabited during the whole term of its deposition.

“4th. Below the stalagmite is a solid bed of red marl, of the same character with the superficial soil of the surrounding country, intermixed with fragments of the limestone of the cavern—the masses becoming larger as they descend—and spines of stalactite from the roof, intermixed with which are found the fossil bones and teeth. From the disturbed state of the soil it is not possible in this section to determine their original position. They appear to be thoroughly mingled with the soil, and not stratified or resting on the surface as in other parts which were subsequently examined. At about

10 feet from the surface the heavy masses of rock prevented further examination; but at the distance of a few feet from the spot Mr. McEnery sunk a shaft to the depth of about 25 feet (36), through similar detritus, without reaching the original floor of the cave. After examining several promising spots with very partial success, a portion of the unbroken floor was selected beyond the upper entrance, which in winter is a pool of water, but which was then dry (37); the surface was swept and thoroughly examined, in order that no extraneous matter might become intermixed with the loam, after breaking through the stalagmite, and lead to error. The floor was broken, presenting appearances similar to those already described, with the exception of a variation in the consistency of the different laminæ of which the stalagmite was composed, arising from their having been alternately deposited under water, and when the surface was dry. The same distinct separation was here observed between the pure white stalagmite and the red loam, or marl, which has been before described. The marl was more stratified, as were also the bones which it contained, in some parts in great abundance. A distinct layer of fragments too much decayed to be clearly identified is left standing, below which was found the most interesting object of our research,—a flint knife,—not a good specimen, and composed of a stone of rather a different quality from the rest, but still so closely resembling those which have been found in other parts of the cave, and which are unquestionably artificial, that it is evidently the product of human art; and from the precautions which were taken there cannot be a doubt that its original position was *beneath* the unbroken floor of stalagmite, imbedded in the marl, under precisely similar conditions with the fossil bones. This specimen is now in the Museum (38).

“The next portion of the cave which was examined was at the end of the long gallery, near what Mr. McEnery had named the ‘Pulpit Screen’ (39). In a small recess, on the right hand, the stalagmite presenting a peculiarly smooth and even floor, appearing to rest upon a surface of mud which had been tranquilly deposited within its narrow limits. The surface was again swept, and every precaution taken to avoid any possible error. On undermining the floor the usual bed of loam was found, the stalagmite being about a foot thick, near the surface was a bed of teeth (principally Hyæna’s); with fragments of bones, and amongst them a flint knife, one of the most perfect which has yet been found (40).

“Whatever theory may be founded upon these most interest-

ing discoveries, which are so much at variance with the opinions generally entertained by geologists in regard to the comparative antiquity of human relics, and the remains of extinct animals,—of the fact itself there cannot be a question, as the whole of the excavations were superintended either by the Sub-Committee in person, or by the guide, George Pearse, upon whose accuracy they have the fullest reliance.

“It is a satisfactory confirmation of this opinion that Mr. McEnery had arrived at the same conclusion, as is evident from several passages in his unpublished memoir, for the use of which they were indebted to Mr. Lear (41). It also coincides with the views of Mr. Austen, as given in his papers published in the Geological Society's Transactions [2nd series, vol. vi., part 2, pp. 443–6].

“The collection of fossil bones and teeth which has been made in the late excavations is as great as might have been expected, considering that the best portions of the Cave had been already so thoroughly explored. No large or perfect specimens have been discovered; and the whole of the remains are apparently gnawed into fragments by the hyænas and bears, whose worn teeth are found amongst the bones upon which they preyed. In this respect the views of Mr. McEnery, Dr. Buckland, and other geologists are fully borne out,—the Cave appears to have been long the resort of beasts of prey before the irruption of the mud which imbedded their remains.

“Near the entrance, above the stalagmite, were found some interesting traces of the early British inhabitants,—a small glass bead with the peculiar notch observable in the Kimmeridge coal money, and a circular wheel, apparently the base upon which pottery was formed, are placed in the Museum (42). There is no doubt that a more extended examination of the black earth on the surface, and between the masses of rock, would afford many more specimens of a similar character.

“The total expense incurred in the investigation has been £20 0s. 6d., from which must be deducted £3 18s. received for admission to the Cavern during the progress of the work, leaving a balance of £16 2s. 6d.; a sum which we trust the members will not consider to have been expended in vain. The specimens obtained are fully of that value, and much important information has been obtained relative to the structure of the Cavern, and that much controverted question—the position of the first relics of human art. The cave is left in a condition which will enable the members and all who take

an interest in these important questions to review the evidence, and to prosecute any further investigations which may be thought desirable at a future period."

MR. E VIVIAN. 1846-1864.

During a long course of years Mr. E. Vivian, M.A., favoured the Torquay Natural History Society with almost annual lectures on Kent's Cavern. They were usually delivered in the Society's Lecture Room, but occasionally in the Cavern itself, where the Chamber selected for the purpose has consequently acquired the name of the *Lecture Hall*.

His lectures, and speeches on the same subject, delivered elsewhere from time to time, were reported in the *Torquay Directory*; and the same journal contains sundry letters by Mr. Vivian, forming his contributions to discussions on the Cavern.

Though these articles are of considerable value as showing the growth of opinion respecting the bearing of the Kent's Hole relics on Anthropology and Palæontology, they are no doubt to be regarded rather as comments on, or perhaps echoes of, the opinions of Mr. Mac Enery, whose *Cavern Researches* were printed *in extenso*, in 1869, in the *Transactions* of the Association (Vol. iii. pp. 196-482). It seems unnecessary, therefore, to reproduce the articles here, especially as they are not unfairly summarized in the abstract of his paper read to the British Association in 1856, printed in the *Transactions* of this Association in 1868 (Vol. ii. pp. 518-20).

APPENDIX : NOTES.

In the foregoing compilation it will be found, in some cases, that the same exploded hypothesis, or incorrect statement of fact, has been repeated again and again by the various writers; but it has not been thought necessary to direct attention to them in the following *Notes* more than once in each instance.

(1. p. 142.) The passage found by Mr. White is interesting on more than one account:—

(A) The earliest mention of the Cavern with which we were previously acquainted was that on the *Plan of the Torwood Estate*, dated 1769, now in Mr. Kitson's office, Torquay. (See *Trans. Devon. Assoc.*, vol. iii. pp. 191-2.) The passage discovered by Mr. White shows that the Cavern was known at least 110 years earlier still.

(B) It is worthy of remark that in the *Deed*, as well as in the *Plan*, the Cavern gives a name to a portion of the estate, which in the former is a "close," or "field," or "piece of ground called Kent's Hole;" whilst in the *Plan* it is "Kent's Hole Field;" and thus renders it highly probable, to say the least, that the Cavern had not then been recently discovered. Its name was so well and so generally known as to be used to define the position of a piece of ground in a legal instrument in 1659.

(C) It can scarcely be necessary now to hesitate about accepting as genuine the dates cut by visitors in the Cavern Stalagmites, most of them being subsequent to 1659; and the remarks already made may be held to cover even the earliest of the others,—that of 1571, or 88 years before the date of the *Deed*.

(2. p. 143.) It cannot be doubted that to those "attempts to work the stones and spar" certain acts of spoliation which have been perpetrated in the Cavern may be ascribed. Thus, there is in what is called the *Cave of Inscriptions* a large boss of Stalagmite, bearing an inscription mentioned by the late Rev. J. Mac Enery at least four times (see *Trans. Devon. Assoc.*, vol. iii. pp. 275, 314, 459 twice), the apex of which has been broken off, and a hole 7 inches deep bored into it, no doubt, with the intention of blasting it. It would seem that the discovery that "the stones and spars did not prove ornamental" was made in time to prevent this consummation. (See *Rep. Brit. Assoc.*, 1875, p. 7.)

(3. p. 143.) The "two caves in Devonshire" were, no doubt, Kent's Hole, Torquay, and the Pixies' Hole, Chudleigh. Mr. Northmore, who first found bones in Kent's Cavern, tells us that his discovery was made on 21st September, 1824, that he immediately communicated the fact to Dr. Buckland, and that the latter *some short time after* continued the search on the same spot. (See *Trans. Devon. Assoc.*, vol. ii. pp. 482-4.) Dr. Buckland, writing Sir W. C. Trevelyan on 14th November, 1824, in terms indicating an acquaintance with the Cavern, stated that he would try to go to Devonshire in the following January, when he would visit Kent's Hole and the Pixies' Hole. (*Ibid.*, vol. vi. p. 52.) *The Monthly Magazine* for 1st March, 1825, states that Dr. Buckland had examined the Chudleigh Cave and, having penetrated the Stalagmite, had found remains of Hyæna, Deer, and Bear. (*Ibid.*, p. 53.)

Whilst the evidence seems satisfactory as to the Caverns, it is not conclusive respecting the presence of gnawed fragments of bone in both. In fact I have no recollection of ever having seen, nor can I now find, any statement, except that just quoted from the *Edinburgh Philosophical Journal*, of such specimens having been met with at Chudleigh.

(4. p. 144.) The article by Dr. Fleming to which Mr. Mac Enery alludes is probably that entitled *Remarks illustrative of the Influence of Society in the Distribution of British Animals*, published in the *Edin. Phil. Journ.*, vol. ix. pp. 287-305, 1824, in which some of the speculations of Dr. Buckland are combated.

(5. p. 144.) The Hyæna's skull discovered by Mr. Mac Enery is, no doubt, that mentioned in his *Cavern Researches* (*Trans. Devon. Assoc.*, vol. iii. p. 290), and figured in his *Plate B.* (Mr. Vivian's ed.). This fine specimen, it is believed, is now the property of the Torquay Natural History Society, to which it was presented by the late Mr. R. Stewart, who purchased it at the sale of Mr. Mac Enery's effects in 1842.

(6. p. 144.) A plate, formerly the property of Mr. Mac Enery, of the skull of Hyæna found at Lawford, near Rugby, and no doubt the plate of which he writes, is now in the collection of the Torquay Natural History Society, to which it was presented by Mr. Gardner, of Torquay. Beneath the figure, the following statements occur:—"Interior and Palatal View of the Hyæna's Skull from Lawford $\frac{1}{4}$ of Natural Size. G. Scharf del. and lithog: Printed by Hullmandel. London. Pubd. by J. Murray, Albemarle St., 1825." (See Owen's *Brit. Foss. Mam.*, p. 148-9.)

(7. p. 144.) The "Idol Cave" is that branch of the Cavern which Mr. Mac Enery called also the "Wolf's Cave." He thus describes the circumstances which suggested the names:—"At the mouth of the long and narrow strait stood a tall stalactite of a singular form. It claims notice from a singular resemblance to a Hindoo Idol, which circumstance suggested the appellation of the Idol Cave; but more particularly for standing on the head of a Wolf." (See *Trans. Devon. Assoc.*, vol. iii. pp. 293-4.) It was in this Idol Cave that, in January, 1826, five months before the date of his letter, he discovered the teeth of *Machairodus latidens*, figured

in his "Plate F.;" and in a letter dated "Lyons, 14th March, 1826," Dr. Buckland had informed him of the great importance of the discovery.

(8. p. 145.) It is evident that when Mr. Mac Enery's letter was written (19th June, 1826) Dr. Buckland was not in England. I have elsewhere called attention to the fact that he wrote Mr. Mac Enery from Lyons in the previous March (See *Trans. Devon. Assoc.*, vol. iv. p. 475), and it is not improbable that it was this letter the latter was "anxious to acknowledge," and that the Professor was still on the Continent.

(9. p. 145.) For a description of his present to the *Philosophical Institution of York*, or, more correctly, the *Yorkshire Philosophical Society*, see Mr. Mac Enery's letter in the *Transactions of the Devonshire Association*, vol. iv. pp. 472-5.

(10. p. 145.) When Mr. Mac Enery remarks that he had sent to York "Plenty of gnawed bones, as many as would satisfy a *Scotch palate*," he alludes to the fact that some of the leading biologists in Scotland were sceptical respecting the occurrence of teeth marks of the Hyæna on the Kent's Hole bones. Dr. Buckland seems to have spared no pains to dispel these doubts, for in the Lyons letter of 14th March, 1826, just referred to, he says, "I have sent the gnawed fragments you gave me to Scotland, and trust that ere this opposition in that quarter will have ceased." (*Op. cit.* p. 475. See also *Edin. Phil. Journ.*, vol. xiv. pp. 363-4, or *Trans. Devon Assoc.*, vol. iii. pp. 194-5.)

(11. p. 145.) It may, perhaps, be inferred from the statement in the foregoing letter, written near the end of 1826, —that Mr. Mac Enery "appeared to think that very little remained worth digging for,"—that his systematic labours did not extend much over a year, as he states elsewhere that they were commenced at the close of 1825. (See *Trans. Devon. Association*, vol. iii. p. 444.) It is, no doubt, true that, at least, his great palæontological discoveries were made in 1826; thus, the canines of *Machairodus latidens* were found in January of that year. (See *Cavern Researches*, Plate F., Mr. Vivian's ed.) In the following June, as his letter just quoted shows, he was able to report that he had exhumed a perfect skull of Hyæna; had added considerably to his Elephants, Rhinoceroses, Elks, Deer, and Bears; had met

with some Ursine teeth of great size; and that a large jaw of Lion embellished his collection.

It is certain, however, that he made at least occasional visits to the Cavern for some time after the close of 1826; for his MS. contains the following statement:—"On the 14th August, 1829, visited the cave accompanied by Master Aliffe. We commenced by searching the mould which lay uppermost on which we were standing" (*Trans. Devon. Assoc.*, vol. iii. p. 295); and he then proceeds with the narrative of their researches and discoveries on that occasion.

But whenever his visits ceased, he left, not *very little*, but *very much* "worth digging for," as is attested by the vast collection made by the Committee at present at work in the Cavern, and who have already spent the continuous labour of nearly fifteen years there; and who, besides a vast mass of bones, have disinterred the flint and chert tools of men far ruder and vastly more ancient than those met with by Mr. Mac Enery, notwithstanding the facts that the men he unearthed never polished their stone tools, and were contemporaries of the Mammoth and his extinct companions.

(12. p. 146.) For the word "Tiger," "Lion" should be substituted. It was formerly the practice to speak of *Felis spelæus*, Gold., as a Tiger; but it is now known to be a Lion, regarded by some as nothing more than a variety *F. leo*, Lin.

(13. p. 146.) The Roman coins spoken of by Sir W. Trevelyan were doubtless those found, not in Kent's Hole, but in the cavern at Anstey's Cove, near Torquay. (See *Trans. Devon. Assoc.*, vol. vi., pp. 64, 69.)

(14. p. 147.) The "stratification partly vertical and partly horizontal," mentioned by the Reviewer, has no existence. The limestone beds in which the Cavern has been found are no where vertical and no where horizontal, but incline gently from an anticlinal axis passing through the hill. The error, however, appears to have originated with Mr. Mac Enery. (See *Trans. Devon. Assoc.*, vol. iii., p. 216.)

The hypothesis that "an igneous disturbance produced the Cavern" is equally gratuitous. This also was a favourite with Mac Enery, and has been largely adopted by his readers, as the present compilation shows. There are numerous masses of trap rock in the district, Raised beaches in the cliffs, and Submerged Forests on the strands—all results

probably of Vulcanicity; but there is no indication that any one of them synchronizes with any other, or with any fact connected with the Cavern.

(15. p. 147.) That the *Athenæum* reviewer was probably not a geologist may be inferred from his description of *Stalagmites*. "The fantastic percolations of water," he says, "are termed stalactites when they depend from the roof, and *stalagmites* when they protrude from the floor." Of course, he means, not "the fantastic percolations of water," but the *fantastic masses of carbonate of lime precipitated from percolating water*. This carbonate of lime may be said to form, at least, four distinct groups. *Pendants* from the roof, termed stalactites; *Sheets*, which form floors; *Bosses*, of a more or less conical form; and *Paps*, or slender pillars, which, like the *Bosses*, rise from the floor. The *Sheets* are by far the most important, as being usually much more voluminous than all the others put together, and as sealing and conserving the deposits with their contents. Not only the *Bosses* and *Paps*, but the *Sheets* also, are termed *Stalagmites*.

(16. p. 147.) When the Reviewer says "The rocky floor was polished as if by constant use," he uses almost the precise words of Mac Enery (See *Trans. Devon. Assoc.*, vol. iii., p. 216), but by the connection in which he has placed them they convey an idea which their author did not intend. Mac Enery is speaking of the limestone floor at the Arched Entrance; his reviewer, whatever his intention may have been, leads his readers to suppose it the floor of the "spacious vault" inside this entrance. This "vault," now termed *The Chamber*, may have a limestone floor, but no one can assert that it has, for the deposits have never been excavated to a depth sufficient to determine the point. There is known to be such a floor at the Arched Entrance, but when we laid it bare in 1865, we failed to detect any polish on it.

(17. p. 150.) The opinion that the Hyæna and Bear inhabited at the same time separate portions of the Cavern was also held by Mr. Mac Enery (See *Trans. Devon. Assoc.*, vol. iii., pp. 255-6, and 315-6). The exploration now in progress has not only confirmed his statement that in the Bear's Den ursine remains occurred almost to the entire exclusion of all other genera, but it has also exploded his explanation of the fact. There are two principal *mechanical* deposits in the Cavern: a more ancient, termed *Breccia*,

containing abundant remains of Bear but none of Hyæna; and a less ancient, known as *Cave-earth*, in which relics of the Hyæna are by far the most prevalent, but commingled with those of Bear and many other forms. In the Bear's Den, and other remote parts of the Cavern, the Breccia extends from very near the surface to unknown depths, and remains of Bear are almost the only rewards the explorers find; whilst near the entrances the overlying Cave-earth is of great volume, and hyænine relics abound; but even there, whenever the Breccia is reached it has the same characters, positive and negative, as in the Bear's Den.

(18. p. 150.) Kent's Hole is not, as the Reviewer supposes, a *fissure* cavern, but an unmistakeably clear example of a decided and complete *tunnel* cavern, owing its existence to the chemical action of acidulated water; and the roof has no line of fracture.

(19. p. 151.) Mac Enery's hypothesis of a mud torrent (see *Trans. Devon. Assoc.*, vol. iii. pp. 256, 259, and 316-7), which the Reviewer has adorned with sundry poetic touches, requires considerable modification. The Cave-earth was undoubtedly derived, at least mainly, from the exterior, and was carried in by land floods, but, instead of but one, there were many such floods; there was nothing violent in their action; they were separated by wide intervals of time during which the Hyæna dwelt in the Cave—except when expelled by man,—and he dragged in piecemeal the remains of animals he found dead; and the amount of mud carried in by each flood was certainly small. The "tumultuous waves of the rising ocean" are neither more nor less than garniture.

(20. p. 152.) I have not been able to ascertain anything about the professor or the lecture referred to here.

(21. p. 154.) The Committee now engaged in exploring the Cavern have discovered inscriptions still older than those mentioned by Mr. Kenrick. The earliest known at present is "William Petre, 1571."

(22. p. 155.) As to the ancient rocky floor having been "inhabited by Bears and Hyænas, as well as by Rodentia," we must be content to say that we know nothing whatever about the period at, or the animals by, which the Cavern was tenanted. There is nothing to render it certain, or even

probable, that the oldest deposit found in it was the earliest it contained. It may have been, and probably was, filled and emptied again and again. But waiving this, the Hyæna does not appear to have been a member of the earliest of the Kent's Hole faunas known to us. The earliest known of its deposits contains abundant relics of Bear, and a few of Lion; but not a trace of any kind of the Hyæna, who seems to have reached Devonshire long subsequently.

(23. p. 155.) The hypotheses that the larger masses of rock and the heavier bones sank undermost (*Trans. Devon. Assoc.*, vol. iii. p. 257), and that the flints, had they been present, would have sunk lower than at least the bones (*Ibid.*, pp. 20, 331), have found favour with others besides Mr. Mac Enery (*Ibid.*, vol. ii. p. 521); but as a matter of fact the deposit, instead of being soft and easily penetrable, as these hypotheses assume, was capable of offering such a firm resistance to a falling mass of limestone, that every bone met with beneath, and in contact with, such a mass has invariably been found shivered and with its severed portions lying in juxtaposition. Moreover, heavy bones have not more frequently than light ones been found at considerable depths in the deposits; and though large masses of limestone present themselves everywhere, the largest have certainly been met with at the highest levels.

(24. p. 156.) Mr. Keurick sets forth correctly, and calls attention justly to, the discordant statements made by the early explorers respecting the position of the flint knives. According to Mr. Mac Enery, they were met with at depths not more than a few inches below the surface of the mud (*Trans. Devon. Assoc.*, vol. iii. p. 327); whilst Mr. Austen speaks of them as occurring throughout the entire thickness of the clay. (*Trans. Geol. Soc., Series 2*, vol. vi. p. 444.) There can be no doubt that the statement of each was consistent with his own experience and remembrance; the following passage in Mr. Mac Enery's MS., however, shows that he did find one, and probably three specimens at a depth exceeding three inches:—"The crust [of Stalagmite]," he says, "is about 2 feet thick, steady [= uniform], the clay rather a light red. About 3 inches below the crust the tooth of an ox met my eye (I called the people to witness the fact), which I extracted before M. Aliffe; and not knowing the chance of finding flints, I then proceeded to dig under it, and at about a foot I dug out a flint arrow-head. This confirma-

tion, I confess it, startled me. I dug again, and, behold ! a second, of the same size and colour (black). I struck my hammer into the earth a third time, and a third arrow-head (but white) answered to the blow. This was evidence beyond all question." (*Trans. Devon. Assoc.*, vol. iii. p. 329.) It happens curiously enough that the author and all his readers overlook this "find" when speaking of the depth of the implements.

In justice to Mr. Mac Enery, however, it should be added that he did not suppose that the question of the epoch of the flint tools was finally disposed of, nor did he doubt that further evidence on the point might be discovered. Speaking of the Cavern flint tools, he says, "From this period more especially, March, 1827, I attached still greater importance to their presence; carefully, cautiously, and deliberately scrutinized and noted their localities, and looked for fixed and settled grounds for building my opinion upon. But this evidence is not perhaps yet complete; further inquirers may hereafter light on some more decided document to define their epoch." (*Ibid.*, p. 339.)

It can be scarcely necessary to state that the positions and associations of the flint tools in the Cavern are among the points the British Association exploring Committee have kept prominently always before them. The result has been, not only the abundant confirmation of Mr. Austen's statement, quoted by Mr. Kenrick, that the flint tools "occur in all parts of the cave and throughout the entire thickness of the clay; and no distinction founded on the condition, distribution, or relative position can be observed whereby the human can be separated from the other reliquæ," but that, as already stated, they have discovered tools of flint and chert far ruder than any Mr. Mac Enery saw, and deep in a deposit much older than that to the top of which he supposed them confined.

(25. p. 156.) "The Cave at Brixham," of which Mr. Kenrick speaks, is not the famous cavern discovered in 1858 on Windmill Hill in that town, but the *Ash Hole*, between Brixham and Berry Head (See *Trans. Devon. Assoc.*, vol. vi., pp. 66-8).

(26. p. 156.) For evidence of a Roman station on Babbicombe Down, see *Trans. Devon. Assoc.*, vol. vi., pp. 66-8.

(27. p. 157.) I have not been able to identify the "eminent geologist" mentioned by Mr. Kenrick.

(28. p. 158.) It may be true that, as Mr. Kenrick states, the rate of the deposition of the stalagmite in Kent's Cavern was subject to irregularities, but I am utterly at a loss respecting any evidence on which his assertion can be based, and have great hesitation in accepting his unqualified statement that "at present the deposit has ceased." Mr. Mac Enery supposed the visits of man or other animals sufficient to prevent the formation of a continuous stalagmitic sheet, and that "should it be closed and all access prohibited, the drop would resume its process and quietly create a layer of stalagmite similar to those below" (*Trans. Devon. Assoc.*, vol. iii., p. 261).

(29. p. 162.) The Sub-Committee appointed, by the Torquay Nat. Hist. Soc., to explore the Cavern made no attempt to "draw off" the water in the *Lake*, but the Lake was emptied in 1872, by the Brit. Assoc. Cavern Committee, who bored a few holes through its stalagmitic bottom. It has of course remained empty ever since, but, with the exception of the holes, the basin remains intact.

(30. p. 162.) I do not remember, nor have I been able to find, any passage in his Memoir in which Mr. MacEnery states that relics of any kind had been found in, or connected with, the "Lake." Indeed, so far as I am aware, he contents himself with the following brief mention of it:—"We should not omit to notice the basin of water . . . about which speculation has been so busy—whether a natural spring, or merely derived from copious infiltrations during rainy seasons, which seems its most probable source, for in winter all the hollows are filled with water . . . It seems not at all probable that it was the work of man, whether savage hunter or Druidical Priest, but simply a natural reservoir of the accumulated drop. . . . The cave beyond it deserves no particular notice. Admiral Sartorius and others have swam across. We ought to rake it out." (See *Trans. Devon. Assoc.*, vol. iii., p. 242.) This is scarcely the language of one who expected the Lake to yield traces of "Druidical rites," and it may be surmised that the writer of the article under comment meant, not Mac Enery, but his forerunner Mr. Northmore, who states that his primary object in visiting Kent's Hole, was not that of discovering organic remains, but "to ascertain whether it were or were not a *Mithratic Cavern*," and he adds that "the water of the sacred Nile was brought into [the Pyramids of Egypt] and used for the same purpose of baptismal regeneration as the natural pellucid water of Castle-

ton Cave and Kent's Hole." (*Ibid*, vol. ii., pp. 480-3.) I know of no passage, however, in Mr. Northmore's narrative in which he mentions the discovery of "sepulchral urns," or other "relics of high antiquity," near the "Lake."

(31. p. 162.) According to the records of the Torquay Nat. Hist. Soc., the proposal to explore portions of the Cavern came first before the Committee on 8th September, 1845, when "Mr. Vivian and Dr. Battersby were deputed to wait on Sir Lawrence [V.] Palk requesting permission to explore Kent's Hole for the purpose of obtaining fossil remains." The "permission" appears to have been promptly granted; for the Report of the Committee, presented to the Annual Meeting of the Members on the following 1st November, contains this paragraph:—"We must here congratulate the Society on the following fact, communicated to the Committee by the Treasurer [Mr. Vivian] on the 8th of October last; viz., that Sir Lawrence [V.] Palk had not only ceded to the Natural History Society the sole right of exploring Kent's Cavern,—with the proviso that all remains found therein shall be deposited in the Museum of the Society,—but had also conferred upon the Committee, for the time being, the power of granting admission to the public."

The work, however, was not begun for some months, as is shown by the following minutes, extracted from the Society's records:—

"At the meeting held on Monday morning, May 24th [1846], in Kent's Cavern,

"It was resolved

"That Pearce [George Pearce, of Tor, Torquay, who had long been authorized by Sir L. V. Palk to act as guide to the Cavern] and 2 men be engaged for the purpose of ripping up the floor of the Cavern in order to obtain specimens for the Museum."

"That the public be admitted during the operation of exploring the Cavern, at 1s. each; but on condition of nothing being taken from the Cavern, or the workmen hindered. Tickets to be obtained of the Curator."

"At a Meeting held on Wednesday, June 3rd [1846], Dr. Battersby in the Chair,

"It was resolved

"That Mr. Vivian, Dr. Battersby, and Mr. Pengelly be appointed a sub-committee to superintend the exploring of Kent's Cavern."

The exact date on which the work was begun does not

appear to have been recorded, but "At a Meeting of the Committee held 8th Aug., 1846,"

It was resolved

"That the Cavern be further explored until the sum of £20 in all be expended."

Nor is there any record of the date on which it closed, but it must have ended before 4th November, 1846, for the following is amongst the minutes of the Annual Meeting of the Members held that day:—"The Report of the Society for the past year, and a Report of the Works in Kent's Cavern were read and adopted, for which see [the *Torquay and Tor*] *Directory*, in which they were ordered to be printed." This Report was that now under notice.

(32. p. 162.) The Cavern has two well known entrances, besides, at least, three others at present buried, and which, so far as is known, have never been available within historic times. The two just mentioned are in the face of one and the same low, vertical, limestone cliff, about 50 feet apart, almost precisely on the same level, and nearly 190 feet above mean tide. From their situations they may be called "Northern" and "Southern," and from their shape the former may be termed the "Triangular," and the southern the "Arched" Entrance. Mr. Northmore, like the authors of the foregoing Report, called the northern the "Lower," and the southern the "Upper" (See *Trans. Devon. Assoc.*, vol. ii. p. 495), but it is difficult to see why, and it is not clear that they did not sometimes reverse the order.

(33. p. 162.) The first excavation made by the Sub-Committee was near the south-western corner of the "Sloping Chamber," at the foot of the declivity from which it is named. Taking advantage of a considerable opening made by Mr. Mac Enery, or some of his contemporaries, the Sub-Committee burrowed up the slope, *i.e.* eastward, *i.e.* towards the entrances, beneath the Stalagmitic Floor, which they left intact. This, however, was entirely broken up and removed by the Kent's Cavern Committee of the British Association. (See *Report Brit. Assoc.*, 1871, pp. 7-13.)

34. p. 163.) There can be little doubt that the Reporters slipped into an error in supposing that the "dark mould" overlying the Stalagmitic Floor was "what Mr. Mac Enery denominated the 'Charcoal streak.'" The streak of which he spoke appears to have been a thin horizontal seam of

charcoal found, not on, but within the Stalagmite, and will be mentioned more fully in Note 35. The "layer of dark mould" mentioned in the Report, is that now known as the "Black Mould," which, to the depth of from 3 to 12 inches, covered the floor of the Chambers into which the two external entrances of the Cavern opened, and "thinned out" in the Sloping Chamber and others adjacent to them. (See *Report Brit. Assoc.*, 1865, p. 18.)

(35. p. 163.) Though it is quite true that the Sub-Committee found none, the assertion in their Report, that "no organic remains of any description have ever been found in the stalagmite," is too sweeping, for their predecessor, Mr. Mac Enery, mentions the discovery, within the stalagmite, of such remains a very few feet from the spot the Reporters are here describing; and so important did the case appear to him as to lead him to speak of it at least four times. All the remains occurred in his "Charcoal Streak" already mentioned, at the northern end of that part of the Cavern termed "The Long Arcade," where the stalagmite was from 2 to 2·5 feet thick; and, from his descriptions, the streak appears to have been horizontal, midway from the surface to the bottom of the stalagmite, from 1 to 2 inches thick, about 5 feet in greatest length, composed of charred wood and straw, and to have contained the following objects embedded in it:—Small polished pebbles of white flint; shells; two portions of a jaw, a tusk, and some phalanges of a boar; the under jaw of a badger; bones of rabbits and rats; and cylindrical bones, which Dr. Buckland, who extracted them, assigned to deer. The last were half roasted, and, with the exception of the portions of boar's jaw, all the bones had been more or less exposed to the action of fire. (See *Trans. Devon. Assoc.*, vol. iii., pp. 236, 261, 291, 335; also *Rep. Brit. Assoc.*, 1872, p. 45.)

This streak was detected at the same spot by the Cavern Committee of the British Association, who thus described it:—"At something more than a foot from the bottom of the [Stalagmitic] Floor, there was found in every section a roughly horizontal, continuous, black line, extending from the western wall of the Arcade to a distance, in one instance, of 7 feet, generally about a quarter of an inch thick, but never exceeding half an inch. It was due to the presence of charcoal, and, of course, represented a thin sheet of that material. It was very carefully watched as the Floor was broken up, but yielded no trace of bone or of any substance besides the charred wood." The Committee add that they met with

objects of interest in the Stalagmite *below* the streak, the most noteworthy of which were "a tooth of deer, a large vertebra, a well-worn tooth of hyæna, and a piece of black flint." (See *Rep. Brit. Assoc.*, 1872, p. 45.)

The foregoing, moreover, are by no means the only relics found in the Stalagmite, as the Committee have detected in the same continuous sheet in various parts of the Cavern stones of different kinds, and such as the rock of the Cavern hill could not have yielded; impressions of ferns; shells of cuttle-fish and of cockle; osseous remains of Bear, Mammoth, Hyæna, Rhinoceros, Horse, Fox, and Man; charred wood; and tools, chips, and "cores" of flint. It must be added that organic remains are far less abundant in the Stalagmite than in the mechanically-formed beds.

(36. p. 164.) Mr. Mac Enery records that the shaft he sank in the Sloping Chamber was 30 feet deep, not 25 feet, as stated in the Sub-Committee's Report. (See *Trans. Devon. Assoc.*, vol. iii, p. 248.)

(37. p. 164.) The second excavation made by the Sub-Committee was at the northern end of what is called "The Lecture Hall," in the slope by which it is entered from the "Great Chamber," into which the "Arched" entrance of the Cavern opens directly.

(38. p. 164.) The flint found in the second excavation is probably rather an undressed flake than a tool, though, from the aspect of its broader end, which appears to have been worn somewhat smooth by long use on some comparatively soft substance, it may have been used as a smoothing tool. It is light gray in colour, with dark patches here and there; somewhat scimitar-shaped, though rather broad at one end, which forms an oblique line with the sides; 4·9 inches long on the convex margin, 3·9 inches on the concave edge; and its oblique broader end measures 1·9 inch, but its greatest breadth, at right angles to its longitudinal axis, is 1·8 inch. It has a thin edge all round the margin with the exception of its narrower end, which is abruptly truncated; is ·6 inch wide, and ·3 inch thick. It is very concave longitudinally on its inner face, which has apparently a bulb of percussion at each end, but is otherwise tolerably smooth; strongly ridged on the outer face, which is very uneven; and the ridge is very near the convex edge. Its greatest thickness is rather more than ·5 inch.

(39. p. 164.) The third excavation made by the Sub-Committee was in the southern entrance to "Clinnick's Gallery"—a branch of the Cavern which was not discovered until 1874. (See *Rep. Brit. Assoc.*, 1874, pp. 13–16.)

(40. p. 164.) The "knife" found in the third excavation is formed of the same kind of flint as the flake already described, but it is less mottled. It measures 3·1 inches in extreme length; 1·2 inch in greatest breadth, which is tolerably uniform throughout its entire length; and ·7 inch in greatest thickness. Its lower surface, formed by the dislodgement of a single flake, is very concave longitudinally; and, with the exception of conchoidal fracture, is even and smooth. The outer face is convex, and from the butt end, where it is strongly ridged, it tapers irregularly and in all directions. This face was formed by the dislodgement of six flakes. Except at the butt end, its entire margin is sharp, and without any visible trace of wear or of dressing on its inner face; whilst on the outer surface there are along more than half the periphery, and especially at the rounded anterior extremity, numerous and distinct indications of chipping. The outline of the inner face is not unlike that of the sole of a shoe for the left foot, exclusive of the heel. The entire surface of the tool has a slight patina, and the ridges and edges are without the least trace of abrasion or travel. The tool, though a decidedly good one, is inferior to several that have been subsequently found.

(41. p. 165.) The Mr. Lear mentioned by the Reporters was a Torquay tradesman, who had made a considerable collection of fossils from the Devonian limestone of the neighbourhood of Torquay, as well as of bones from Kent's Hole. At the sale of Mr. Mac Enery's effects he purchased the MS. of the "Cavern Researches," without being aware of it, in a lot of loose papers and other "odds and ends."

(42. p. 165.) A "glass bead" may or may not have belonged to early British times; but it does not appear to be safe to regard it as an early British *product*. According to the *Ency. Brit.* (8th ed., vol. 10, p. 658, col. 1), "From the circumstances of coloured glass beads and amulets having been found among Druidical remains in this country, it has been urged by Pennant and others, that the art of making glass was known in Britain before its invasion by the Romans. It can hardly, however, be believed that a people who had made very trifling

advances in civilization, and who, it is known, were entirely unacquainted with any other art, should be found not only conversant with the manufacture of glass, a complicated and highly ingenious process, but should excel in it; for the beads and amulets spoken of are of excellent workmanship, and beautifully coloured in imitation of the rarest and most precious stones. There seems little doubt, therefore, that the ancient Britons procured them in the course of traffic with the Syrians who visited the island."

There is a passage in Mr. Mac Enery's MS., transcribed by Mr. Vivian as "small oblong beads of opaque crystall glass" (See *Cavern Researches*, p. 17, col. 1); but according to my reading, it is "small oblong bids of crystal opaque" (*Trans. Devon. Assoc.*, vol. iii., p. 297), having no mention of *glass*, and no *certain* mention of *beads*—the word *bids* being probably a miswriting of *bits*.

The "circular wheel" mentioned by the Reporters was, no doubt, what is known as a "spindle whorl."

NOTES ON TORBAY.

BY ARTHUR ROOPE HUNT, M.A., F.G.S.

(Read at Paignton, July, 1878.)

DURING the present meeting of the Devonshire Association no object will be more constantly before the eyes of the members of the Society than Torbay. Its beauties, its form, the many-coloured rocks that encircle it, are patent to all. But Torbay has other features of equal interest, though not so obvious; and some of these I propose to bring before the Society on the present occasion, confining myself as much as possible to the record and discussion of facts that have not, so far as I am aware, been hitherto sufficiently noticed.

A visitor to Paignton Sands will scarcely fail to observe a large number of cockle-shells lying about. Now a sandy shore is just the place where, if anywhere, cockles are to be found; and our stranger, if not a conchologist, if he has noticed the shells at all, will in all probability not give them a second thought. If a conchologist, he will at once perceive that these are no common cockles, but that they are of two species, both rare elsewhere; and that the common spinous cockle of the British coasts (*C. echinatum*), if present at all, is in a very small minority. The cockles found on Paignton Sands are *C. tuberculatum* (Linné), *C. rusticum* (Forbes and Hanley), and *C. aculeatum*. Before proceeding further, let us refer to the books, and see what authorities have written of these two species. Of *C. aculeatum* Mr. Jeffreys writes: "Not uncommon on the South Devon coasts, especially at Paignton; but scarcely ever found in the living state."* Of *C. tuberculatum* Mr. Gosse writes, quoting and confirming Dr. Turton: "Old Dr. Turton, a great authority in his day for Devonshire Natural History . . . says that the cottagers about Paignton well know the 'red noses,' as they call the

* *British Conchology*, vol. ii. p. 269.

great cockles, and search for them at the low spring-tides, when they may be seen lying in the sand with the fringed siphons appearing just above the surface. . . . The creatures have not changed their habits nor their habitats; for they are still to be seen in the old spots just as they were a century ago."* Mr. Jeffreys also says that the habitat of this species is from low-water at spring-tides to twelve fathoms. Here then we have Mr. Gosse, whose special study was zoology, noticing the abundance of living specimens of *C. tuberculatum*, and ignoring *C. aculeatum*; and on the other hand Mr. Jeffreys, as a conchologist, remarking on the abundance of dead shells of *C. aculeatum* whilst noticing the absence of the living mollusc. From the observations of the eminent naturalists quoted above, we may infer that, evenly distributed as are the shells of the two species on Paignton Sands, their habits and habitats in Torbay must differ very considerably. Such is the case, as I shall now proceed to show.

On the 1st February, 1873, a severe easterly gale visited Torbay; and on the 4th I walked over from Torquay to Paignton to note the effects, if any, of the heavy waves. Among other things I observed that between Preston Lane and Redcliff House there were a good many lutrarias lying about, but not many cockles. Under Redcliff House cockles were cast up in some abundance, consisting almost entirely of *C. tuberculatum*. From Redcliff House to Torbay House† these shells formed an almost continuous line, and might have been counted by thousands. Wondering to see such a preponderance of *C. tuberculatum*, I looked carefully for *C. aculeatum* as I walked along, and think I am within the mark when I say that of this shell I did not see a dozen examples between the points mentioned. Under Torbay House, and beyond, cockles were even more numerous. They were lying in heaps, and being collected for manure; but here instead of *C. tuberculatum*, *C. aculeatum* preponderated, and *C. tuberculatum* was comparatively scarce. This natural sifting and sorting of species attracted my attention at the time, and I made a note of it the same day, which note I now give, having seen no reason to doubt its correctness from further investigation." "Can this" (the specific assortment) "be owing to the fact that the gale commenced from the south-east, and changed on Sunday to east and north-east,

* *A Year at the Shore*, p. 89.

† Since removed; formerly stood a little to the south of the present Esplanade.

the *rusticum* (*tuberculatum*) living nearer the shore would be cast up first under the influence of the south-east wind; the *aculeatum* having further to travel, living further seawards, would be cast ashore under the influence of the north-east wind, and thus be found in greater numbers in the south-western end of Paignton Sands. N.B.—Between the Red House and the north-east end of the sands there were very few cockles." On the occasion referred to the shells *C. tuberculatum* were comparatively uninjured by the waves, whilst *C. aculeatum* showed signs of rougher usage; and in almost, if not quite, every instance these molluscs, though thrown on shore living, were denuded of their spines. If the position of the cockles on the sands suggested a more distant derivation for *C. aculeatum* than for *C. tuberculatum*, the state of their shells confirmed this view. I had already noticed whilst dredging that *C. aculeatum* was to be sought for further seawards than *C. tuberculatum*, which latter is often taken when shrimping along the sands; but I now paid more attention to this point.

A few weeks after this gale I dredged a quantity of *C. aculeatum* some distance off Paignton dead or dying, and totally denuded of spines; and in the following May, whilst fishing for dabs in the bay, also off Paignton, found that the fish had been feeding on the cockles, as was evidenced by sundry red arms and siphons of the molluscs. Apparently the gales of February and another in April had broken up the ground, and rolled and killed sufficient cockles to attract the dabs, as those fish were unusually abundant at that time. On the 14th of January of the following year, 1874, I took about one hundred cockles in three hauls of a small dredge off Paignton. Among them were two or three specimens of *C. tuberculatum*, but all the rest were *C. aculeatum*. These shells were peculiar in one respect—they had all been thoroughly rolled at some period and been denuded of all spines, but since the rolling a new rim of shell had grown out from underneath the uninjured edge of each valve sufficient to carry two, and in some cases three spines on each rib. In many instances the newly-grown shell had been again rolled and worn, and the process of repair in the case of those that were still alive was being undergone a second time. It seems likely that these cockles had been rolled by the gales in the spring of 1873; that those that had escaped with life repaired damages, but were again rolled by an easterly breeze in the following October. The fact that out of about one hundred cockles some ninety-eight were *C.*

aculeatum accounts for the separation of species on the sands in 1873, and is a satisfactory proof that the two species, similar as they are, keep, at least to some extent, to different areas in Torbay. The spot where these rolled specimens of *C. aculeatum* were taken is almost exactly one mile east of Roundham Head, in six fathoms at low-water spring tides.

This haul of damaged cockles so far from the shore, besides evidencing the segregation of *C. aculeatum*, reveals another interesting fact, and that is, that at a depth of at least six fathoms waves roll into Torbay of sufficient magnitude to disturb the bottom to the extent of rolling and killing molluscs, whose habit is to bury themselves in the sand at the bottom of the sea, and not only to do so at very rare intervals, but in the case under consideration twice within some eight months.

If it is the case that in one portion of Torbay *C. tuberculatum* lives close to the shore, whilst the allied species *C. aculeatum* lives at some distance from it, it would seem probable that there must be some difference in the construction of the two molluscs that prevents their being able to occupy the same ground, otherwise it would be difficult to understand why the two species, living so near to each other as they do, should nevertheless keep so much to themselves.

One of the most marked differences between *C. tuberculatum* and *C. aculeatum* is in the length of their species—one, as the names imply, is the tuberculated cockle and the other the thorny cockle, and thorny it is, some of the spines being a quarter of an inch in length. As cockles are burrowing molluscs, it is evident that the sand must offer less resistance to the comparatively smooth *C. tuberculatum* than to the long-spined *C. aculeatum*, and that the latter might find it difficult, if not impossible, to make a home where the former could settle itself very comfortably. On the other hand, when once in the ground the longer spinal cockle would be more securely moored, and therefore less liable to disturbance than the shorter spined species. If this view is correct *C. aculeatum* could not burrow and live in hard ground, which would throw no obstacles in the way of its smoother cousin, whilst the latter in ground soft enough for *C. aculeatum* would find itself at an disadvantage for lack of sufficient holding power in the form of spines. Now just such a difference in ground we find off Paignton; viz., hard sand inshore, and very fine soft sand further seaward.

It may be worth noticing that, as far as Torbay and its vicinity is concerned, the distribution of cockles has some

relation to the degree in which they are spiniferous or not ; e.g. *C. norvegicum*, which is as smooth as a marble, inhabits the deeper water at the mouth of the bay ; *C. edule*, which is rough but not spiny, inhabits the sheltered harbours and estuaries of Torbay and the neighbourhood ; *C. tuberculatum*, which is solid, heavy, and to some extent spiny, lives in the hard sand on western shores of the bay ; whilst *C. aculeatum*, with its delicate shell and immense spines, keeps to the fine sand further seawards. Of these, *C. norvegicum* is out of reach of the effects of waves from the deep water it selects, and from its living on a rough bottom ; *C. edule* avoids rough seas by keeping to landlocked bays, estuaries, and protected harbours ; whilst *C. tuberculatum* and *C. aculeatum*, which are both known as spiny cockles, have to face heavy waves and ever impending destruction. Theirs is a hard struggle for existence, and though at present the supply seems to keep pace with the demand of the hungry waves, which cast them ashore by tons at a time, it is not difficult to perceive that without the aid of their anchoring spines they might be less able to maintain their position.

The marked separation as to habitat between these two cockles, so much alike as they are in general appearance, is a fact of interest not only to the conchologist, but also to the geologist. Every geologist is aware that some fossils are extremely local, perhaps to be found in only one quarry in a district that contains many other quarries of apparently identical stone. In Torbay we have before us an example of such a separation of forms ; and were its bottom to be consolidated, raised, and quarried, we might easily have one quarry producing no *cardium* but *C. tuberculatum*, within a mile of another producing none but a closely allied species, viz. *C. aculeatum*, with perhaps just a solitary specimen here and there of the former species. No doubt it would be a knotty point to decide whether *C. aculeatum* had developed into *C. tuberculatum*, or *vice versa* ; and even the discovery of a raised beach in the neighbourhood, containing shells of both species, might not quite settle the question, as the worn state of the shells of *C. aculeatum* might be held to indicate that they were *remanie* fossils.

Were the supply of sand in Torbay to be cut off, another common feature in geology might meet with an illustration ; viz., the sharply-defined zone in which fossils frequently occur. Were such supply to be cut off (and from the isolated patches of red sandstones that skirt the bay, we see how much less it already is than it has been in past time) the sand-loving

cockles could not fail to be affected, and might even become extinct in this locality at a very rapid rate.

Passing now from the Torbay cockles, we will proceed to consider Torbay itself.

A glance at the Admiralty chart will suffice to inform us that the greatest depth of water in the bay, excepting certain places near its mouth where the tides are strong, is only six fathoms. This is a notable fact, and one not generally realized. Few, perhaps, of those who admire the expanse of the bay from the surrounding hills, are aware that any building exceeding thirty-six feet in height, if sunk in the bay, would appear above water at low water spring tides. If the shallowness of the water be remarkable, the uniformity in depth is equally so. Over a large area in the centre of the bay, the depth does not exceed or fall short of six fathoms by so little as eighteen inches; for the chart marks differences of quarter fathoms, but no such deviation is here recorded. Again, all these six-fathom soundings lie so compactly together that a line can be drawn round the whole of them on the chart, so as to include every sounding marked with a 6, and exclude all others whatsoever. In the centre of Torbay the bottom, according to the chart, is a level plain, averaging some four thousand yards from north to south, and something less from east to west, with an area of about five square miles. Now it would seem that some agency must be at work to keep the bottom of the bay at this dead level, as, were it otherwise, the tides and currents of varying strength which prevail in the bay might be expected to distribute the sand and mud obtained from the shores with some degree of irregularity. The only agency that occurs to me competent for the task is the disturbing and planing action of the heavy waves which roll into Torbay when visited by severe easterly winds, followed by periods of quiescence when the winds blow off the shore, or if from the sea with but moderate force.

As the action of waves at a depth of thirty-six feet of water in Torbay is not likely to meet with general acceptance, I have endeavoured to obtain information bearing on the subject, both practically and theoretically. I have already mentioned having taken quantities of rolled cockles in six fathoms about a mile east of Paignton Pier, and it is the fact that since 1871 up to the summer of the year 1878 I never failed to find them in greater or less quantity about that spot. On the 21st March last a strong north-east wind sprang up, which blew for twenty-four hours; and early in April a more moderate easterly wind prevailed, but for a

longer time. On the 18th April I dredged on the old *aculeatum* ground off Paignton Head, but in five hauls I failed to get one single valve of any cockle whatsoever. Something had swept the bay clean, and the bottom seemed harder there than usual. A day or two later my boatman told me that the reason I dredged no cockles on the 18th was, that all the cockles were ashore at Paignton, and that quantities had been carted away for manure. On the 27th April I visited Paignton, and found the sands strewn with shells of *C. aculeatum* and *C. tuberculatum*; the latter being much the most plentiful. The two species were not separated, as in February, 1873. The fact that the bay was swept of the cockle-shells, may possibly be owing to the sea having been sufficiently rough to drive dead shells, or living ones that chanced to be on or near the surface, on shore, though not sufficiently so to tear the living ones out of their beds to any extent, and leave them scattered on the bottom. On the 2nd May, whilst dredging for shrimps close to the sands, I took a living specimen of both species. The *tuberculatum* was slightly rubbed, the *aculeatum* very thoroughly so, as if it had travelled a long distance. On the 14th May a haul about the centre of the bay produced a pair of *C. tuberculatum*, dead, and only one-third grown, and three small valves of *C. aculeatum*. The specimens of *C. tuberculatum*, though so immature, showed signs of at least five or six separate rollings in the course of growth, and the small valves of *C. aculeatum* showed signs of one. None of these were rolled to the extent of those taken nearer the shore, but perhaps as much so as might be expected, considering the very soft bottom on which they lay. These rolled shells were taken three thousand five hundred yards east-south-east of Paignton Pier, in about the centre of the six-fathom area, and it seems difficult to escape from the conclusion that waves occasionally roll into Torbay of dimensions sufficient to cause considerable disturbance at the bottom at that depth. However, in considering the power of the waves to roll cockles at the bottom of the sea, it must not be forgotten how very much lighter they are in water than in air. A large specimen of *C. tuberculatum*, whose greatest diameter was three inches, as taken out of the sea full of water, weighed 2486 grains, whereas weighed in sea-water, its weight was but 786 grains, its specific gravity being thus less than 1.5, as compared with sea-water.

As might be expected, the evidence of disturbance in shallower water is still more convincing; and I shall now proceed to adduce some facts respecting that portion of the bay off

Daddy Hole Plain, where the depth is about five fathoms, and perhaps I cannot do better than call as witnesses some old notes, recorded years ago, and with no expectation of their ever seeing the light. They are as follows :

"12th November, 1872. Wind strong N.E. Dredged under Daddy Hole. Not a single oyster. Shall try it again after a strong easterly wind. The oyster-ground formerly was from off Syracusa to Livermead Head, keeping the Great Rock shut up, or partly shut up, in the Thatcher.

"18th November. Dredged off Torre Abbey, keeping the rocks in one. The first haul brought up six oysters; the second, one.

"22nd November. Dredged from Torre Abbey, off and on, with shrimp-dredge. Caught about one and a half quarts of prawns, and ten oysters. Last haul towed out to the ground dredged on 18th November. In this haul caught a fine *Cyprina islandica* (dead). Caught seven more oysters; one good valve of *Thracia convexa*, and two broken ones; some good specimens of *Lucinopsis undata*; and one *Artemis exoleta*—all dead.

"28th November, 1872. (1) Five oysters. (2) Five oysters; one live *Lucinopsis* among the dead shells. It seems to have been imbedded in a black-blue clay; was much stained, and had some of the clay adhering. (3) Five oysters. (4) Five oysters. After the above four hauls, I tried the shrimp-dredge, and then both dredges together. Five seemed to be the lucky oyster number; for with both dredges down, one caught four, and the other one.

"12th November, 1872. Dredging off Daddy Hole, caught two *Cyprina islandica* (one very large one alive); one nearly perfect *Thracia convexa*—much to Stockman's joy.

"6th and 7th February, 1873. Stockman dredged alone off Daddy Hole. Found the ground much altered by the gales—live *lutrarias* where there were none before. On the 7th, three *Thracia convexa*, but all more or less broken by dredge-iron; one alive, but quite broken up.

"February 14th, 1873. Had one haul on the oyster-ground. Caught nothing but weed.

"February 7th, 1874. Took a large *Pleurobranchus membranaceous* with a landing net, at the back of the new pier, floating about four feet below the surface.

"March 4th, 1874. Found a fine valve of *Thracia convexa* on Paignton Sands."

From the above notes it appears that on the 12th November, 1872, I failed in taking a single oyster under Daddy

Hole Plain, but anticipated better luck after a strong easterly wind—the wind at the time being from that quarter.

On the 18th and 22nd November, and 12th December, I took a good many oysters, and living specimens of the following molluscs, viz. *Cyprina islandica* and *Lucinopsis undata*; and one entire *Thracia convexa* (dead), besides three valves. Now all these molluscs live in the sand, not on it, and would not be taken on the surface unless disturbed.

On the 6th and 7th February, 1873, a few days after the heavy gale, my boatman was dredging alone off Daddy Hole, and took, besides some live *lutrarias*, a living *Thracia convexa*—both burrowing molluscs, and strong evidence of disturbance, which moreover he reported to me at the time.

On the 14th February, a week later, a further change had taken place. The weed that usually lies in the corner off Torre Abbey, had been swept to sea, and dredging on the oyster-ground was effectually prevented.

In December, 1873, and January, 1874, *Pleurobranchus membranaceus* was very abundant in the bay. On February 7th I took a large specimen in a very unusual manner, and sent it to Mr. Gwyn Jeffreys. Mr. Jeffreys expressed a wish for some more, and I had no doubt but that I should be able to get him as many as he wanted. However, rough weather came on, and from that day to this, more than four years, I have seen but one *P. membranaceus* in Torbay. The species was swept out of the bay, and probably driven on shore.

In the year 1875 Mr. D. Pidgeon contributed a valuable paper on "The Marine Conchology of Torbay" to the *Transactions* of this Association; and I cannot refrain from quoting *in extenso* one paragraph from it, in confirmation of my own notes. It is as follows: "The muddy sand off Daddy Hole plain undoubtedly abounds in *Thracia convexa* (the "Golden Hen"* of the fishermen); but it is very seldom obtained, on

* The origin of the term "Golden Hen" is obscure. Messrs. Forbes and Hanley suggest that the epithet "golden" has been given on account of the large price paid for the shell of *Thracia convexa* by collectors. But the term "hen" is more perplexing than the epithet, which well describes the tawny colour of a fine specimen. I have had occasion to notice that the Torquay dredgers and fishermen are apt to call a shell with which they are unacquainted, a "hen," e.g. *Mya truncata*, and I think also *Macchia stultorum*. Further, the Torquay cockle-gatherers are in the habit of calling the cockles and tapes, which they collect indiscriminately, "cocks and hens," and I have been gravely informed that these "cocks and hens are of the same nature when boiled," but that the cocks are rough, whilst the hens are broader and smoother. My informant evidently believed they were, as he termed them, "hes and shes" of the same species. If then, in the eyes of a fisherman, a tape is a hen, as also a *Mya*, it would be but a short step to call the smooth, tawny *Thracia* a "Golden Hen."

account of its burrowing habits. In February of this year, however, it occurred to the writer in comparative abundance for several days together, after heavy weather from the eastward. It was taken in the prawn-trawl—a kind of dredge without a cutting edge, which rakes over but does not penetrate the surface of the ground. The shells were all dead, but had only recently lost their tenants, and it was clear that their presence was due to the disturbance of the ground caused by the gales. The burrowing habit of *Thracia convexa* is well illustrated by its capture, living and in some abundance, by my friend Captain Bedford, R.N., in masses of stiff clay, brought up on the flukes of his anchor when weighing off Mull.”

Having myself worked at the practical side of submarine disturbance, I prevailed on a mathematical friend to give me some information on the action of waves at a depth of thirty-six feet, the depth of Torbay at low-water spring tides. He wrote me as follows: “There is no doubt in my mind that when the wave length is several times the depth, the motion near the bottom must be considerable. When the wave length is very long (twenty or thirty times) compared with the depth, the flow of water is much the same from top to bottom, or at least would be so were it not for the friction at the bottom. The transporting power might be expected to be the same as in a river of the same velocity, or perhaps even greater on account of the reciprocation.”

Again, “In waves whose length is more than five hundred feet, or even less, the maximum horizontal velocity all the way down is about as many feet per second as the wave has height.”*

Again, “There would be no great difference between wavelengths of five hundred and three hundred feet in water of thirty-six feet; an inch or two more in the height would make it up. When the length is a good many times the depth of water, the height of the waves is the principal thing.”

I have no knowledge of the length of storm waves in Torbay, but have seen Brixham trawlers beating out when the waves were about three times the length of the vessels, which would make the wave lengths somewhere about two hundred and fifty feet. It was blowing hard at the time, though doubtless in heavy gales the waves are much larger. However, on the occasion referred to the bottom seemed

* The height referred to is above mean level, and the whole statement is made with reference to water thirty-six feet deep.

thoroughly stirred up, as the colour of the sea was much the same as the fine sand at the bottom—a dull reddish-brown.

If the waves ever attain a length of three hundred feet, and a height of three feet from mean level, six feet from trough to crest, we should have an alternating current at the bottom, whose maximum, according to my friend's calculation, is equal to about three feet per second; and a current of this velocity, according to Sir Charles Lyell, quoting from the *Encyclopædia Britannica*, would be capable of rolling stones of the size of an egg, whereas a current of but six inches per second would suffice to lift fine sand.

We thus find theory and practice confirming each other as to occasional disturbance, to some extent, at the bottom of Torbay; indeed, were it otherwise, it would be difficult to account for the colour of the water during rough weather, when it corresponds so closely in tint with the sand below it. If it is a fact that waves from the channel disturb the bottom of Torbay at a depth of thirty-six feet, it follows that at that depth the sea is capable of causing denudation in a greater or less degree. When waves set into a bay, the tendency of the currents is to set seawards; and in the case of Torbay, I have been told that during easterly gales the easterly current on the northern side is continuous. The sediment disturbed by the waves, if light enough, is carried away by the currents, and that, in plain words, is denudation, although, in the particular case under consideration, this removal of sediment may be balanced by additional material derived from the Triassic cliffs. Geologists will see the significance of this submarine denudation, but space precludes my enlarging on the subject here.

Submarine denudation must have a levelling tendency; for the waves, excepting in the extreme cases where the depth is small as compared with the wave length, lose their power rapidly as the depth increases; and a wave that would act appreciably on the top of a sandbank might have very little effect on the level of the base of the sandbank, and would thus tend towards planing it away.

The result in Torbay of the occasional disturbance of the bottom by heavy waves, followed by periods of rest, seems to be the level plateau forming the six-fathom area already described—a plateau covered with a quartzose sand of excessive fineness, which is probably derived from the crumbling Triassic cliffs of Torbay pounded into an almost impalpable powder. So fine indeed is this sand, that in the examination

with a half-inch objective of a sample taken at random in midbay, I was unable to measure a single grain which exceeded one-hundredth of an inch in length, whilst the majority were very much smaller.

Below this sandy deposit the dredge will rarely penetrate, and for further information we must look elsewhere, and perhaps we can find no better witnesses than the anchors of her Majesty's ships.

From a seaman's point of view, Torbay would be described as follows:

"Bottom very diversified. Much mud and sand in the northern part of the bay; but at the usual large-ship anchorage, nearer Brixham, much clay, and mud and clay mixed. When in the sandy district the anchors frequently come up clean. At the Brixham anchorage there is a good clay holding-ground." I may say that this information is on the very best authority; but having reached me indirectly, I do not feel at liberty to divulge the author's name.

I have never but once seen any indication of clay when dredging in the six-fathom area in Torbay, and then it was not very decided. On the 4th May, when the sample of sand already referred to was taken, the dredge contained two or three lumps of muddy sand sufficiently consistent to preserve the cast of some boring animal. The colour was just the same as that of the submerged forest clay at Torre Abbey, and I think these lumps, if not actually clay, indicated the close proximity of clay. If the forest clay extends to this point (three thousand five hundred yards from Paignton Pier), as seems probable, there is no reason why it should not extend some seventeen hundred yards further, to the limit of the six-fathom area, where the depth is precisely the same. That a submerged forest does exist beneath the waters of Torbay has long been believed by geologists* on the evidence of the mammoth's tooth dredged off Brixham, and now in the Museum of the Torquay Natural History Society. Over the six-fathom area there is no sign of rock, and there can scarcely be any within reach of a ship's anchor, or it would be speedily found out; but in the shallower water nearer the shore there are several rocks or reefs worth a notice. Equidistant from Saltern and Elbury Coves, about fifteen hundred yards from each, there is a low reef of rocks marked on the chart as "The Ridge." It is composed of limestone, thoroughly honeycombed by rock-

* Sir C. Lyell, *Antiquity of Man*, 4th ed., p. 398; W. Pengelly, *Trans. Devon. Assoc.*, vol. i. part 4, p. 30.

boring molluscs, if we may judge of the whole by one or two fragments torn off by the dredge. Had they but time enough, these molluscs would eat away this isolated patch of rock to the level of the surrounding sand, which would then speedily make an end of them, and perhaps even obliterate their traces. Were the basin of the bay then to be elevated, and the sand around the "Ridge" removed, future geologists would behold a mass of limestone with a terrace of denudation on its summit, gradually rising towards the west, owing to its formation on a gently-shelving bottom. It is not impossible that some might ascribe the denudation to the action of waves on a tidal strand, the inclination of the terrace favouring such an hypothesis. Boring molluscs seem to have the greatest effect on hard limestone rocks of any marine agents. Waves alone are powerless even to disturb the weed and marine animals on their tidal surfaces. Waves with sand or stones have a scouring action, but some of the *saxicavidae* bore and undermine them in all directions.

Off the northern shores of Torbay there are several sunken rocks of interest. From the "Shag," which is a limestone rock, a reef runs off in a south-easterly direction for some four hundred and fifty yards, over the highest point of which there is less than a fathom of water at low spring tides. This reef is composed of slate rock or grit, such as we find at Meadfoot, and does not correspond in that respect with the Shag Rock, of which it seems a continuation. From the south point of the "Thatcher" the bottom is rocky in a westerly direction, and here (about four hundred yards from the "Thatcher"), on the 4th December, 1872, my dredge detached a large fragment of slate rock with a fine *gorgonia* growing on it. This rocky ground extends also to the southward, and I have more than once been fast to rocks about four hundred yards south-west by west of the "Thatcher," though without being able to ascertain their nature. About one thousand yards south-east-by-south of the "Thatcher," on the 9th April, 1872, the dredge got fast, and ultimately brought away a piece of grey grit similar to the above, composing the cliffs opposite on the mainland. This sunken rock, which I believe my dredge was the first to find, is about the centre of a depression known to dredgers as "the pit." This depression has water of eleven fathoms in it, surrounded by soundings not exceeding nine fathoms. Situated as it is at a spot where the tides are very strong, and where the currents between the two headlands of the bay and those to and from its northern shores meet each other, it seems

probable that it has been formed by the tidal currents themselves. It forms quite a museum of dead shells.

The reason I have dwelt so long on these unheeded rocks is, that they show us that the old northern coast line of Torbay was composed of slate and grit just as we see the recent coast line at the present day. The outlying islands of limestone, which have survived owing to their superior powers of resistance, were connected together by slate and grit, as are now the Daddy Hole and Hope's Nose limestones. The sunken limestone and slate rocks of Torbay prove also that where they exist the Triassic sandstones, which by the position of their remains appear to have formerly filled the greater part of the bay, can never have been present to any great depth.

THE GEOLOGY OF THE NORTH-EASTERN COAST OF PAIGNTON.

BY W. PENGELLY, F.R.S., F.G.S., ETC.

(Read at Paignton, July, 1878.)

VERY soon after the meeting of this Association in 1877, I decided on attempting to prepare a paper on the geology of Paignton for the present meeting. Though not unfamiliar with the subject at that time; though from the 10th September of last year to 17th June, 1878, I have made from twenty to thirty geological visits to the parish, and have traversed all its roads, lanes, and paths, most of them several times, and studied and made notes on all the sections—natural and artificial—which have presented themselves; and though the literature of the subject has been by no means neglected, one of the results has been increased strength in my feeling of being unprepared to produce a monograph on the geology of Paignton. Instead, therefore, of any loftier flight, I purpose contenting myself on this occasion with offering a few remarks on the geology of the coast from the end of Hollacombe “Lake” to the oriental-looking building known as Redcliff Tower—in other words, the north-eastern coast of Paignton.

Commencing, then, at the north-eastern corner of the parish, at the mouth of the valley down which flows the rivulet dividing Cockington and Paignton parishes, and, in accordance with Devonshire phraseology, known as Hollacombe *Lake*, we have a cliff, not more than 20 feet high, divisible into two distinct zones—the lowermost 14 feet being occupied with what in the district are popularly known as the *Red Rocks*, and the uppermost 6 feet with an accumulation of angular stones representing a more modern period and different conditions.

The lower zone consists of Sandstones and Conglomerates with a few thin marly partings, and is usually regarded as belonging to the *Triassic* system of the geologist; and though

there are a few who suspect it to belong to the *Permian*, or next older system, it will be regarded as Triassic in this communication.

Proceeding southward, the cliff becomes gradually higher, culminates at 55 feet above mean tide, on reaching what, from the neighbouring hamlet, may be called Hollacombe Point, and then becomes gradually lower until, at the eastern end of Preston Lane, it is no more than five feet high above the existing beach. This varying height of the cliff is due to corresponding changes in the elevation of the Trias, not to variations in the thickness of the overlying zone.

From Hollacombe Point northwards the beds of Trias are sensibly horizontal, but in the opposite direction they dip gently towards the south, and occupy no more than one foot at the base of the five-foot cliff at the northern angle of Preston Lane. South of the Lane their dip carries the Red Rocks below the level of the existing beach, and at present they are not seen again until reaching Paignton Harbour. All, however, who remember the district before the erection of Redcliff Tower, will also remember a low flat cliff of the Red Rock on which that building stands, but which is now entirely concealed by the Sea-wall. Happily the fact is perpetuated in the name *Redcliff Tower*; and by it the stranger may be preserved from believing that the entire area between Preston Lane and Paignton Harbour is one continuous unbroken plain, composed everywhere of deposits of very modern geological age.

The Sandstone beds occasionally display good examples of the structure known as diagonal stratification.

The materials composing the Conglomerates are fragments of Trap and Limestone, with some pieces of Quartz and dark red Devonian Sandstone. It is not easy, perhaps not possible, to point out the parent rocks which produced the pieces of Trap; but there is no difficulty with regard to the other fragments, as Limestone beds abound in various parts of the Torbay district, and the whole of the northern part of the parish of Paignton, as well as great part of the adjoining parish of Cockington, is rich in dark red Devonian Sandstone, traversed in places with thick veins of quartz.

The fragments of Trap are almost always well rounded; but this is far from being the case with those of the other kinds of rocks, whose frequent sub-angular forms show that they have travelled neither far nor long, and that the beds which they help to make up should rather be called *Breccias* than *Conglomerates*.

Thin, discontinuous, almost black, ferruginous layers, of the nature of *Iron Pan*, occur here and there in the cliff, but by no means so abundantly as between Saltern Cove and Broad Sands, farther south.

The colour of the Sandstones is usually a deep uniform red, the Conglomerates assume a somewhat purplish tint, whilst the Marls have a dull chocolate hue. At Hollacombe Point, however, large surfaces of sensibly-horizontal beds are exposed, and are traversed by numerous irregular cracks such as are produced by desiccation in sheets of lime prepared by the plasterer, and in beds of mud. Whatever may have been their origin, the cracks have been filled with material having a colour unlike that of the beds in which they occur, and that the colour of the overlying bed, so that a resemblance to an irregular tessellated pavement is the result. At the base of the cliff immediately south of Hollacombe Point there are more or less continuous, but not uniform, yellowish bands, which send thin threads of the same colour into the red Sandstones, some of them in the direction of cracks, some along lines of diagonal stratification, and others irregularly.

In the Conglomerate beds, many of the stones, whether of Trap, or of Limestone, or of Quartz, are surrounded with a whitish yellow ring, generally of sensibly circular, but sometimes of irregular, outline. Such rings are, of course, sections of spheroidal envelopes which completely invested the stones, and were caused by some chemical agent which changed the prevalent red compound of iron into one of the colour of the envelope. Colour phenomena of this kind are met with in various parts of the Devonshire Trias, but in certain localities they do not occur; and it has been observed that in no area is every stone thus attended; that every such coloured patch has a stony nucleus; that small stones are sometimes surrounded by broad investments, and large stones by narrow ones; and that the envelope *fits* the nucleus closely, never leaving an unoccupied space between them. Though it must be concluded that the nucleus is in some way essential to the phenomenon, it is obvious that the discolouration is independent of the chemical composition of the stone, since, as has been already stated, stones of all kinds are alike invested.

The Trias does not present many *Faults* in the cliff now under notice. There is one a very short distance north of Hollacombe Point, through which the beds are about 5 feet lower on the south of the fracture than they are on the

north. A second occurs immediately south of the Point, where the effect is in the same direction, and about the same in amount.

Caverns occur somewhat frequently north of Hollacombe Point. The largest, perhaps, is about 24 feet across at the mouth, 28 feet deep, and from 10 to 12 feet high at the entrance, where it is most lofty. The floor of undisturbed Trias forms a series of steps leading to the back of the cave. Adjacent to it, on the southern side, there is a second and smaller cave; the separating wall being no more than 2 feet thick. There can be no doubt that this partition will ultimately disappear, and the two caves become one. Indeed, there is already a hole in the partition 5 feet long and upwards of 2 feet high.

Occasionally a cave of two stories presents itself; or more correctly, perhaps, one cave immediately over another. In one example of this, the stories were separated with two continuous beds of Trias.

In some instances the floors are covered with shingle, in others they are the bare Red Rock. The roofs differ greatly in promise of durability.

At the fault immediately south of Hollacombe Point, there is a wave-worn roofless Gully about 40 feet long, and varying from 10 feet wide at its mouth to 1 foot at the inner end.

Rocks of the character of the Torbay Trias are not calculated to be very durable. They become easy victims to the sea, to land springs, and even to what is called the *weather*. So far as their destruction by the sea is concerned there can be no doubt that it is mainly achieved through the formation and enlargement of caverns such as are described above.

On proceeding to the study of the uppermost of the two cliff zones, it will be observed that the accumulation is not stratified; that the materials are almost all of them remarkably angular; that they are loosely aggregated; that, with scarcely an exception, they are all pieces of dark red Devonian Sandstone; that they lie with their longest axes at all angles to the plane of the horizon, though with perhaps a very slight tendency to lie *in* that plane; that the accumulation is thinnest at Hollacombe Point, and becomes thicker both north and south of that point, and as it descends to lower levels; that it extends from the parish of Cockington, north of Hollacombe Lake, to some distance south of Preston Lane; and that the contour of the surface before the accumu-

lation was lodged on it was very much the same as the contour of the present surface.

It is, perhaps, not easy to say how far the accumulation extends inland, but every one who has noted the slopes of the adjacent railway cuttings must have observed that the sections are identical—a basal zone of Trias capped with a mass of angular stones generally of a dark red colour; and those who have walked by the Hollacombe rivulet know that its entire course between Paignton and Cockington parishes is through an aggregation having all the characters of the uppermost zone of the cliff.

It is by no means difficult to assign localities whence the stones were probably derived. The whole of the parish of Paignton north of a line drawn due west from the northern end of the accumulation, as well as the greater part of the adjacent parish of Cockington, consists of beds identical in character with the stones in question. Moreover, the ground, with the exception of the Hollacombe Valley, rises immediately behind the area occupied by the accumulation itself, attaining a height of 150 feet within a quarter of a mile in Paignton, and rising much more abruptly on the Cockington side. The stones had but short distances to travel; and that the journey was of but brief duration may be seen in their angular forms.

So far as the Cockington portion is concerned, there is no difficulty; but it may be doubted whether there is at present any natural machinery in the district capable of transporting the stones from the parent beds to the area they cover within Paignton, and especially the southern part of it; whether, in short, if hedges and roads and buildings were abolished, and agriculture were entirely suspended, any amount of time would enable even the copious rains for which Devonshire has credit to wash stones of such a size to the cliffs about the eastern end of Preston Lane.

As to the period when the transportation occurred, it was certainly after the district had acquired the surface configuration which now characterizes it. Hollacombe Valley was already in existence, and, at least, almost as deep as it is at present. Again, the stones are so prevalently angular, and so lacking in arrangement, that it seems impossible to believe that they have ever been subjected to the rolling and assorting power of the sea. A glance at the existing beach at the foot of the cliff, a study of the Raised Beaches almost within sight, must suffice to show that no part of the accumulation at present sub-aerial was at or beneath the

sea-level when it was first brought together, or has been submerged since that time. And yet, when the Torbay Raised Beaches were formed—now standing at about 30 feet above the sea level—almost the entire district from the Mouth of Hollacombe Valley to Paignton Harbour must have been submarine. In short, it seems impossible to avoid the conclusion that the bed of angular stones capping the Triassic cliff in the north-east corner of Paignton parish was lodged where it is now found at a period subsequent to the elevation of the Torbay Raised Beaches.

It has been already stated that at the northern angle of the eastern end of Preston Lane the Trias occupies no more than the basal foot of the low cliff. At the southern angle of the lane there is no Trias to be seen, the southerly dip of the formation having carried it below the level of the beach; the cliff, not more than 5·5 feet high has the bed of angular stones at its base, and at the height of about 3 feet there is overlying it a bed of yellowish or lead-coloured clay, from 3 to 6 inches thick; over which again is vegetable soil, about 2 feet thick, with grass on its surface.

The bed of angular stones, with the bed of clay above it, dips southward, conformably with the Trias beneath the whole. At about 100 feet south of the lane this dip has carried the clay down to the level of the tidal strand, as well as the bed of stones below it, and the latter are seen no more except, here and there farther south, where the waves, by occasionally stripping off the shingle and cutting furrows through the clay, disclose the angular stones in their place underlying the clay bed.

Though the clay becomes gradually thicker, its character is not strongly pronounced until at and beyond 40 feet south of its first appearance at Preston Lane end. Its lower portion is a mixture of sandy clay and stones, including many of the angular fragments of Devonian Sandstones already mentioned; whilst the upper portion is occasionally very dark, from the presence of vegetable matter. From about 100 feet, to upwards of 380 feet, south of Preston Lane the clay forms the landward margin of the tidal strand, with a covering of sand and shingle at intervals; but at the distance just mentioned a peaty bed is found overlying the clay. That this bed of vegetable matter extends continuously beneath the sand and shingle to, at least, the low-water line, and for considerable distances southward, has been placed beyond any doubt, not only by exposures after heavy gales, but also by excavations made by workmen at various times,

in different directions, and for noteworthy distances. On 24th September, 1877, when visiting the spot, I was so fortunate as to find Mr. Evans, a contractor, there, whose men were engaged at the time in building a sea-wall for the protection of the *Green* or *Esplanade* immediately north of Redcliff Tower. He was so good as to take me to an excavation, about 4 feet deep, which he had made in the beach that day near the eastern end of the wall. In this excavation the bed of peat, 2·75 feet thick, was lying on the characteristic clay. Mr. Evans informed me that in excavating for the foundation of the wall he had never reached the base of the clay; that in the peat he had found stumps of trees measuring in girth as much as himself; that in some places the peat was so loose and yielding that carts sank into it to the axle of their wheels, as had happened to one of his own carts that very day; but that in most places it was quite compact and firm. The bottom of the excavation Mr. Evans showed me was some feet below spring-tide high-water level, and this he told me was the case also with all the stumps of trees he had mentioned.

In short, this mass of peat is one of the numerous examples of the well-known Submerged Forest of Torbay. The clay on which it lies and in which the trees grew is, of course, more ancient than the period of the forest growth; and the bed of angular stones beneath the clay is more ancient still. This mass of stones has been already shown to be more modern than the Raised Beaches of Torbay; and thus, thanks to the angularity of the stones, and to the lack of arrangement amongst them, we are furnished with *proof* of what had previously been considered *probable* by most, that in Devonshire the Submerged Forests are more recent than the Raised Beaches; that during the growth of the Forests, the Beaches, in common with the district generally, were considerably higher than they are at present; and that since the elevation of the Beaches the district has never been at so low a level as it occupied during their formation.

ON THE GEOLOGY OF PAIGNTON.

BY W. A. B. USSHER, F.G.S.

By permission of the Director-General of the Geological Survey of England and Wales.

(Read at Paignton, July, 1878.)

A STUDY of the geological features of Paignton may be termed in every sense threefold. The rocks and recent deposits are referable to three widely-separate geological epochs: 1st, The Pleistocene or most recent period; 2nd, The Triassic; and 3rd, The Palæozoic. Taking each in turn, we shall find that a threefold division of the Pleistocene deposits—the Triassic rocks, and the older strata surrounding them—may severally be made.

The Pleistocene deposits, with the exception of thin strips of alluvium bordering streams near Cross and Colleton Kirkham, are confined to the seaboard. They consist of (*a*) old fluvial deposits, capping the low cliffs between Livermead and Preston Sands; of (*b*) peat, with traces of a submerged forest, associated with bluish clay, which is exposed on Preston Sands. The peaty matter slopes seaward from under the recent alluvial deposits of Paignton Marsh. Mr. Pengelly is acquainted with the details, but I am not aware that he has published them. Mr. Godwin-Austen* says that traces of submerged forests lay on lacustrine mud at Broad Sands, in which *Paludina* shells were obtained; and that traces of lacustrine marl were noticed near Goodrington. Thirdly, (*c*) we have in the alluvial deposits of the Goodrington and Paignton flats, and in the blown sands extending from Roundham Head to the north part of Preston Sands, and in the present sea-beaches, the latest evidences of Pleistocene deposition. Of these three phenomena the gravels near the gas-works are probably the oldest; that is, their formation dates back to a recent geological time, when the cliffs on

* *Trans. Geol. Soc.*, vol. iv., "Geology of South-East Devon," p. 439.

which they rest extended further seaward. This is further proved by the isolation of a small gravel-capped pinnacle of Triassic sand and breccia near the cliffs. Prior to and during the formation of this gravel a belt of forest-land may have flourished on a more extended coast line; but the recent date of the gravel renders it more probable that during its formation the sea had so far gained on the existing seaward land as to convert the low-lying tracts of vegetation into peat-mosses, damming up the valleys, and causing the landward peat-growth to be buried in the alluvial sediments brought down by the streams whose seaward outlets had been choked by gravel-bars. Finally, in gaining its present bounds the sea swept away its dams, whereby the little lakes, which we may compare to Slapton Lea and the Fleet, were drained, and the dried beach-sand was drifted landward over the alluvium.

All these events transpired within that most recent part of the Pleistocene period which succeeded the formation and elevation of the old beaches of Hope's Nose and other places. Running water, wind, and wave were the three agents at work. An old river-bed, dry; an old land-surface, partly buried beneath river sediments, partly beneath sea-sand; and a low bank of sand, shifting with the shifting winds, are the three phenomena accounted for.

TRIAS.

The Triassic area of Paignton is joined to the main mass, extending to the north of Cockington and Tor Abbey, by a fringe of breccia and sand, forming the promontory of Livermead and Corbons Rock. A part only of the lowermost division of the Trias is represented in the Paignton district, the beds being probably contemporaneous with part of those exposed in Oddicombe Cliff, and at Watcombe and Petitor.

The Paignton Trias exhibits three distinct lithological varieties, in places occupying stratigraphical horizons; but on the whole apparently interchangeable, and due to local derivation attendant on changing sources of supply.

The three varieties are breccio-conglomerates, breccias, and rock-sands.

(A) The breccio-conglomerates are largely used for building purposes, and have been quarried in Paignton, West of Polsham, near Cross, to the west of the Naval Hospital, and to the north of Collaton Kirkham. They form a hard, distinctly bedded rock, composed of limestone and grit pebbles,

and subangular fragments of limestone, grit, slate, and quartz, in a consolidated matrix of calcareous sandstone. The upper beds of the rock contain fewer limestone fragments, and apparently pass into a *bona fide* breccia.

(B) Breccia, containing grit, slate, quartz, and limestone fragments, occurs at Livermead, Corbons Rock, and Paignton Quay, in a matrix of soft sandstone or loamy sand. Breccia, of a rubbly character, and strictly local derivation, forms the western limits of the Trias towards Berry Pomeroy, and its southern boundary to within a mile of the Naval Hospital, from near Colleton House, eastward. The rubbly breccia in the last case is very similar in places to a heading of the slates on which it rests; it appears to underlie the breccio-conglomerates in this part of the area. A band of breccia running in a North and South direction through Paignton separates the sands from the breccio-conglomerates, and probably in part overlies, in part passes into the latter.

(C) Red rocksands are confined to the environs of Paignton, not extending westward of the church. The sands are false-bedded in places. It is difficult to determine whether as a whole they overlie the breccias and breccio-conglomerates, or pass horizontally into them, dying out along certain horizons from a local mass. The latter idea seems to be borne out by the general impersistence of sandstones in association with coarser materials, and by the following observations.

A thick bed of sand occurs in the breccia and breccio-conglomerate forming the southern cliff of Roundam Headland, marking by its displacement several small faults, and attenuating westward to the Head where it plunges beneath the beach with a northerly dip of 10°. To the north of Preston Sands the sand appears to pass downward into breccia; whilst in the cliffs forming Livermead promontory the sand is overlain by breccia, in which fragments of igneous rock, and Beekite-coated limestone are abundant. Corbons Rock consists of breccia overlying red, yellowish, and grey banded sandrock.

That peculiar form of chalcedony called Beekite seems to be confined to the limestone pebbles in the breccias and breccio-conglomerates of the Paignton area. I was glad to find my observations on the absence of beekital structure in the limestone fragments of the Oddicombe and Watcombe conglomerates confirmed by Mr. Pengelly. Mr. Vicary has found Beekites in the Crediton Valley at Slade and Solton, where hard breccia occurs. I observed somewhat similar

structure in a fragment near Sandford, in the same district. The breccias of Livermead, and the railway cutting by Roundham Hill, are the best localities for obtaining Beekites. The limestone is often dissolved away, leaving the hard chalcedonic coating.

FAULTS.

Faults are very numerous on the coast. They cannot be traced inland, probably owing to their small effect. In Roundham Headland I noticed eight faults; in Livermead fifteen; in Corbons Rock six. None of these appear to be important.

OUTLIERS.

Near Blagdon Cross there is a small outlying patch of breccia.

Two outlying patches of breccia at Smoaky Ho and Ockham (south of Marldon) prove the original connection of the Paignton Trias with the main mass on the north in that direction. These outliers consist of rubbly breccia derived from the slates and shales on which they rest.

Proceeding southward from Roundham Head traces of marginal Triassic deposits are noticeable in several places. They generally consist of hard breccio-conglomerate, with limestone fragments, and dip seaward. A small patch occurs on the south of Goodrington Sands, where the railway crosses the lane to Goodrington. About one hundred yards to the south the cliffs are composed of breccio-conglomerate for about two hundred yards, a small fault is shown, and at the north end the unconformable position of the outlier upon the slates is well exhibited.

In Saltern Cove two blocks of breccio-conglomerate were observed.

Between Saltern Cove and Broadsands the cliffs are composed of breccio-conglomerate for two hundred yards.

At the north end of Broadsands a patch of breccia, of a very crystalline character in places, appears to be faulted against the limestone. A boss of sandstone, intersected by numerous veins of calc spar, is shown on the beach.

At Galmpton Point two blocks of breccio-conglomerate were observed.

FISSURES.

Partly owing to rubbly character, partly to chemical changes in consolidation, fissures filled with Triassic matter are difficult to detect. In the Broadsands Railway cutting, in two places, pockets in limestone are apparently filled with Triassic *débris* ;

also in two places, by the high road south of Goodrington, in one of which (a small quarry) the relics are much indurated.

EXTENSION OF THE TRIAS.

The position of the Paignton Trias and its outliers is sufficient to warrant a belief in a former greater extension westward; whilst the outliers toward Brixham evidence its prolongation to the south.

The outlier of sand and breccia of Slapton, and the Thurlstone patch which we visited last year, are further indices of extension toward Plymouth.

The abnormal colour of the Thurlstone outlier, accounted for by its strictly local derivation, is worthy of note.

Mr. Townsend Hall tells me that, on a visit to Cawsand, with Mr. Whitaker and others, during the recent Meeting of the British Association, they observed a Triassic outlier associated with the trap rock. Having never visited Cawsand, and never found trap, as coloured on the old survey map, unassociated, by contact or proximity, with Trias, I was startled by its, happily only apparent, isolation in this case. How far the Trias may have extended along the Cornish coast, no evidence is forthcoming to show; but even though such evidence should prove an extension to Gorran Haven, I still submit that it is not to the present limits of Cornwall and Devon that we must look for sources of derivation for Budleigh pebbles, but to the Channel area, wherein rocks of the Gorran type may be much more abundant.

PALÆOZOIC.

Having a very limited acquaintance with the Palæozoic districts near Paignton, I cannot attempt a detailed description of them, which, thanks to the excellent work and untiring zeal of Mr. Champernowne, is not necessary.

The Triassic area of Paignton is bounded by reddish-brown slates and shales with beds of grit. Near Cockington red-brown grits or sandstones occur, whilst the limestones of Brixham extend to within half a mile of the southern margin of the Trias. I am inclined to think that the relations of the beds are often obscured by faults. On the whole my limited experience affords no grounds for doubting the triple division of the beds and their succession as given by Messrs. Champernowne and H. B. Woodward; viz. (1) Limestones upon (2) slates and shales, upon (3) sandstones.

I experienced much difficulty in ascertaining the dip of the limestones, in some places being unable to distinguish

planes of stratification, and was disposed to regard the junction of the slates and limestones as irregular, allowing the intercalation of masses of limestone in the upper part of the shales and slates.

If we suppose the limestones to have been coral reefs, I cannot see why they should be persistent over a large area, even as an upper zone, or why it is necessary to connect isolated masses by anticlinal curves in all cases. The reef builders would no doubt progress in their upward labours whilst on the subsiding sea-bed fine mechanically-worn materials were being spread. An early colony might commence their structures before the reef-building became general; and in any case the abrupt termination of the reef against mechanically-derived sediment would be not more extraordinary than the abrupt termination of a mass of submarine lava quickly entombed in water-borne matter. In the present state of the Devonian question we may safely regard these three groups as subordinate to the bluish-grey culm measures.

I for one should be glad to see the south-east Devon rocks proved parts of the Carboniferous system, and partly equivalent to Old Red Sandstone. How long the local epithet of Devonian may weather the assaults of Mr. Champenowne it is hard to say; but if the existence of a period between the Carboniferous and Old Red Sandstone is sufficiently demonstrated on the other side of the Atlantic and in Germany to justify the correlation of Devon rocks with either area, when the stratigraphical relations of the Devon beds *inter se* are ascertained, the broad facts of local physical conditions will perhaps prevent the absolute fixture of definite horizons of correlation.

MYLES COVERDALE.

BY THE REV. TREASURER HAWKER, M.A.

(Read at Paignton, July, 1878.)

THERE is scarcely anything, so far as I have been able to make out by search and enquiry, recorded of Myles Coverdale in the county, beyond a few official acts during his two years' tenure of the Bishopric of Exeter. And there is absolutely nothing in connection with the pleasant spot where the Devonshire Association is now assembled, except the fact that he was the last episcopal occupant of the Palace here.

The stately building itself has well-nigh disappeared. There are remains of the tower, walls, and what appears to be the former chapel; also traces of a gateway. The park seems to have been large, and remains of trees are seen at low-water at the mouth of the harbour, which, tradition says, were in the park. Whatever property belonged of old to the Bishops of Exeter is no longer identified with the See, and the visits of our present diocesan are now paid, not for his recreation, but to discharge the duties of his high office. The Precentor of Exeter Cathedral derived much of his income from lands in "Peynton," as it is spelt in the old deeds; but however well he may chant now, he is not likely to recover them.

Still it is impossible, and it would be disrespectful to such a name, to pass over without any notice so eminent a person as Myles Coverdale. His piety, his industry, his scholarship, above all, his remarkable translation of the Bible, demand attention, to say nothing of his chequered career in the troublous times upon which he fell. "There were giants in those days," we may boldly affirm, when we take note of the many learned works brought out, amidst difficulties and distractions, by those who set themselves to serve God by advancing divine knowledge, and Myles Coverdale stands in the foremost rank. The list of his treatises, sermons, ex-

positions, religious letters, and spiritual songs is a long one, besides his great task of translating the Holy Scriptures.

As a proof of Coverdale's careful, skilful rendering, I may quote the following verse (Mal. ii. 15), where our version seems hardly intelligible nor in accord with the context. My attention was drawn to the verse, and the point elucidated by that well-known Biblical scholar, the Venerable Arch-deacon Woolcombe, whose industrious researches into the Holy Scriptures have been known to me, his quondam pupil, more years than I and probably he would care to remember. Our present version is this: "*And did not he make one? Yet had he the residue of the spirit. And wherefore one? That he might seek a godly seed. Therefore take heed to your spirit, and let none deal treacherously against the wife of his youth.*" In the preceding verse the prophet is reproving the Jews for their frequent use of the Mosaic right of divorce, and it is difficult to see how our version of the fifteenth verse applies in the first half. Coverdale's rendering is: "*So did not one, and yet had he an excellent spirit. What did then the one? He sought the seed promised of God. Therefore look well to your spirit, and let no man despise the wife of his youth.*" And he places this note in the margin, "The one. This the interpreters reke [*i.e.* probably reckon] to be spoken of Abraham." The Jews of the time justified their habit of divorcing their wives by the example of Abraham taking Hagar to wife. The prophet, in this verse, shows why Abraham did so. It was in despair of having children by Sarah, and so failing to inherit the promise made him by God of a son. He was seeking the promised seed of God. In calling Abraham "the one," the prophet refers to Isa. li. 2, "him alone;" Ezekiel xxxiii. 24, "Abraham was one."

The Vulgate runs thus: "*Nonne unus fecit et residuum spiritus ejus est? Et quid unus quærit nisi semen Dei.*"

The exact rendering of the Hebrew seems to be this: "And did not one do it, and the excellency [or the residue] of the spirit was his? And what was that one seeking? A seed of God;" *i.e.* the promised child. Others render it: "And this [*i.e.* divorcing a wife for any cause] no one does, who has any remnant of spirit [*i.e.* of understanding]. And what did that one? [*i.e.* Abraham.] He was seeking a seed of God." How our present version of the verse was substituted for Coverdale's would be a long enquiry.

His early history is obscure; and his name of Myles Coverdale is supposed to have been assumed from the district of Coverdale, in the North Riding of Yorkshire, where he is

said to have been born in the year 1488, at Coverham, near Middleham. He was educated at the convent of the Augustines, in Cambridge, of which Dr. Robert Barnes was Prior; and he became a monk of the order. He threw in his lot with those who were beginning then to think that a reformation of the Church was necessary, such as Bilney, Stafford, Latimer. His ordination to the priesthood is said to have taken place at Norwich in 1514; and he took the degree of Bachelor of Canon Law at Cambridge in 1531, becoming Doctor of Divinity later on at Tubingen. There is no evidence of his having taken a curacy, or any parochial charge, after he was ordained. He appears to have still resided at Cambridge. Probably he shared in the discussions and disputations of the day, private and public; for the University pulpit was frequently made the arena of conflicting topics between the old and new views. When Dr. Barnes, the Prior of the Convent, was apprehended, and a search made for prohibited books, Coverdale laid aside the habit of a monk, and assuming that of a secular priest, went about, like Wesley, preaching to the people, until it was evidently prudent for him to quit the country. He joined, some say, Tyndal in Germany. This, however, is doubtful; and Anderson, in his *Annals of the English Bible*, seems quite to disprove the story that Coverdale helped Tyndal at Hamburgh in translating the Pentateuch. Tyndal, in 1526, had published the New Testament in English, having printed it at Antwerp, and imported it into England from thence. There was a prohibitory law against any fresh translation, and he could not therefore print in England.

Nothing certain is known about Coverdale until 1535, in which year he published his translation of the whole Bible. It was printed at Zurich. So great and laborious a work demanded the closest attention and utmost assiduity for no small period. This probably would account for the silence about Coverdale for so many years. He was encouraged to publish his translation, no doubt, by the tacit sanction of the bishops of the day. Despite the excesses and extravagant language of the reforming party—unavoidable, perhaps, with pioneers in any cause—most of the bishops behaved wisely and charitably towards them. They saw that some concession must be made to the cry for a version of the Scriptures in the vulgar tongue; and if they did not openly welcome, they did not generally oppose Coverdale's small folio. We may wonder that a man, fresh from the translation of the Holy Book, could in his dedication have so

grossly flattered Henry VIII., or could have so fiercely attacked the Romish party in the Church, an offence against charity, and a thorough blunder, inasmuch as it set Romanists still more against the new doctrines. Some allowance must be made for him on the score that such language to kings and great people was the usage of the age; and we may turn away from Coverdale's unpleasant adulation to the mighty work he had wrought—an untold blessing to generations of men yet unborn.

Wordsworth, in his *Twenty-fifth Ecclesiastical Sonnet*, has put the gain of the translation of the Bible as truly as happily. Speaking in the previous sonnet of the Crown's "assuming a voice of reckless mastery hitherto unknown," he says—

"But, to outweigh all harm, the Sacred Book,
In dusty sequestration wrapt too long,
Assumes the accents of our native tongue;
And he who guides the plough, or wields the crook,
With understanding spirit now may look
Upon her records, listen to her song,
And sift her laws—much wondering that the wrong,
Which Faith has suffered, Heaven could calmly brook.
Transcendant boon! noblest that earthly king
Ever bestowed to equalize and bless
Under the weight of mortal wretchedness."

On the accession of Edward VI., Coverdale returned from Germany to England, where he was made almoner to the Queen Dowager. When Lord Russell was sent down to quell the rebellion in the West of England in 1549, Coverdale attended him as a sort of army-chaplain, and—to quote Mr. Froude's eloquent description of the scene—"preached among the bodies of the slain, as they lay with stiffening limbs with their faces to the stars." Edward VI. promoted him on account, we read, "of his extraordinary knowledge in divinity" ("*Bonus textuarius, bonus theologus*," is the old and true maxim), "and his unblemished character;" so that in 1551 he was appointed coadjutor to Veysey (also called Voysey and Harman), Bishop of Exeter. Practically he superseded that prelate, for he was seldom resident, and neglected the diocese. How far Coverdale joined or was privy to the persecution that arose, we do not know; but he preached at Paul's Cross when an anabaptist did penance, and he sat on the commission in 1551 under which Van Paris was burnt for Arianism. "The whirligig of time brings round strange revenges;" and on his return after his second flight to the Continent, his views were so altered, that his preaching was much sought after by Nonconformists.

At the death of Edward, his tenure of the See of Exeter, and his pleasant days of relaxation at Paignton (for Paignton must always have been, as it is now, pleasant and fair), ceased. He indeed escaped marvellously from Mary's persecution, by the direct personal interference of the King of Denmark, whose favourite, Dr. Machabæus, had married a sister of Coverdale's wife. Thus marriage saved him; whilst another, Rogers, had his brave martyrdom at the stake embittered by his being a married man.

Whilst in banishment—for that was the condition of his release from prison, after much difficulty—Coverdale resided at Wesel and Bergzaberm, in Holland, and at Geneva, his time being occupied in teaching and preaching to exiled Protestants and others. But at Geneva also he joined other English exiles in that translation of the Bible usually called "the Geneva translation," which had explanatory notes, and of which there were above thirty editions in folio, quarto, and octavo.

On Elizabeth's accession he returned with somewhat different views from those which he held as Bishop of Exeter, at least as regards ecclesiastical habits and ceremonies. We do not know that he was worse for the change in any essentials. There are matters of faith and matters of order in every Church, and there is a wide difference between them. Great consideration for his position, and much compassion for his narrow means, was evidently felt by those in authority. Twice he was excused a payment, of which the laity—*fortunatissimi*—are altogether ignorant, called "First Fruits," a crop belonging to Queen Anne's Bounty, and of so early a nature that they are demanded before there has been any real enjoyment of a bishopric or benefice. *Experto crede*. Grindal especially desired to help him, saying to the Secretary of State that "it was not well that Father Coverdale, who was in Christ before us all, should be now in his age without stay of living." And he recommended him for the bishopric of Llandaff, which Coverdale declined, probably from his advanced years and infirmities, besides that he had only just recovered from the plague. In lieu he was collated to the rectory of St. Magnus, London Bridge, which he held for two years, resigning it in 1560. His resignation however was, it is likely, more because of the increased strictness of the government against nonconformity with the Liturgy, than on account of age and weakness; for he continued to preach in private houses, and was much sought after. But he did not live long afterwards. He died, aged eighty-one, in the be-

ginning of 1569, and was buried honourably in St. Bartholomew's Church, behind the Exchange. The crowds who attended his funeral bore ample testimony to their esteem for and love of him.

We have thus given a slight sketch of the last Bishop of Exeter who occupied the Palace in Paignton. I have not noticed, and I do not desire to notice, the charge of cowardice which has been brought against him. It would be a difficult charge to disprove, or indeed to weigh justly, by us in this generation. I prefer to quote finally some wise, true, and charitable words of Professor Huxley, who says, speaking of Descartes' timidity and half-recantation: "'Very cowardly,' you may say, and so it was. But you must make allowance for the fact that in the seventeenth century not only did heresy mean possible burning or imprisonment, but the very suspicion of it destroyed a man's peace, and rendered the calm pursuit of truth difficult or impossible. . . . Let those who are sure they would have done better throw stones at him. I have no feelings but those of gratitude and reverence for the man who did what he did when he did." *

* *Discourses*, p. 343.

BENJAMIN KENNICOTT, D.D.

A BIOGRAPHICAL SKETCH.

BY EDWARD WINDEATT.

(Read at Paignton, July, 1878.)

IN the skeleton sketch of notables of our county appended to the first report of the Committee on Devon Celebrities, published in the *Transactions* of last year, appears the name of Benjamin Kennicott, a Devonshire Worthy but little known, the date of whose birth the compilers of that list appear to have been unable to obtain.

As he was born only six miles from the town in which we are now assembled, I venture, in accordance with the suggestion of that report, to present to you a more lengthened notice of one who is entitled to claim no mean place on the roll of Devon's Worthies.

Benjamin Kennicott was born at Totnes, on the 4th of April, 1718, and was the son of Benjamin Kennicott, the parish clerk of that town. The family of Kennicott appears to have been resident in Totnes for a lengthened period, and at one time to have occupied a good position in the borough, in 1606 one Gabriel Kennicott being mayor of Totnes.

Young Benjamin was educated at the Totnes Grammar School, a school founded by Edward VI. in 1554, and still held in a building adjoining the ancient Guildhall, and with it forming almost the only remains of the priory of Totnes. This school was endowed by the trustees of Elizeus Hele; the corporation in virtue of the endowment sending three boys to the school, who were educated free of expense; and as Kennicott's father held his office of parish clerk by the appointment of the corporation, it seems probable that his son was one of the free boys.

After leaving school he obtained the office of master of the Charity School, a school for poorer children, boys and girls,

who by the endowment of two fields, given in 1741 by one John Phillips, were, in accordance with the wishes of the donor, not only instructed in the knowledge and practice of the Christian religion professed and taught in the Church of England, and taught to read and write, but also provided with a grotesque costume, which in later years was more prized than the instruction.

On obtaining this appointment Kennicott no doubt thought he was indeed fortunate, and that he could hardly expect to attain to a much higher position than this. Prior to this he had tried for the leadership of the choir in the parish church of Totnes, and on failing to obtain the appointment appeared to think his prospects blighted.

As a young man he was very musical, and composed some sacred music. He also took great delight in bell ringing.

In 1732, when he was only fourteen years of age, the bells of Totnes Church were recast by Abraham Rudhall, of Gloucester, the well-known bell founder. At this early age young Kennicott was a ringer.

In the belfry of Totnes Church is still preserved a curious eight-light brass candlestick, with the following inscription engraved on it :

"This Candlestick was given by the Public Ringers of this town (whose names are here mentioned) to be kept in this place for the Ringers use for ever.

Benjamin Kennicott,	John Harris,
Richard Luscombe (<i>fecit</i>),	Peter Harris,
John Tucker,	James Cole,
John Taylor,	Christopher Pinhey,
John Cox,	Richard Cole,
Mark Cocking,	Benjamin Kennicott, Junr.
William Baddaford,	

Anno Domini 1732."

The youngest ringer in ten years more becomes leader, and in 1742 draws up regulations to be observed by the Totnes ringers. These regulations were printed in Polwhele's *History of Devon*, p. 320, and are also to be found in the appendix to the Rev. H. T. Ellacombe's *Church Bells of Devon*, and are, I think, worthy of insertion here. They bear date November 8th, 1742, and are as follows :

"Among the many recreations approved of by the sons of pleasure, ringing is a diversion that may be emphatically said to bear away the *bell*, and so much does it engage the natives

of Great Britain beyond all other nations that it has even the distinguishing appellation of the 'ringing isle.'

"The art then for which this kingdom is renowned shows a judicious taste in those of its inhabitants who have by their performances contributed thereto, since this art wants no foreign encomiast, but the harmonious bells are the heralds of their own praise. The ingenuity required for the diversion administered in, and the health subsequent upon this exercise, give it a particular sanction among mankind, and recommend it as an employment at vacant hours worthy the regard of all denominations.

"We therefore, whose names are subscribed, taking into consideration the great pleasure that results from this manly employment, the innocence with which it is performed, and the advantage enjoyed from so healthy an exercise of our bodies, and also having the peculiar satisfaction of ringing with ease a set of bells of established fame and applauded excellence, do hereby agree to meet together in the usual place of ringing, every Monday evening at six o'clock, for our improving this science; and for the greater certainty of attendance, we do hereby severally promise to forfeit the sum of three pence if not attending at the hour aforesaid, and six pence if not present at seven o'clock, to be deposited in the hands of the treasurer for the time being, and spent as the major part of the Society shall seem fit. And for the better regulation of our fraternity we do also hereby agree that we remain in the belfry during pleasure, and then for the further pleasure and benefit of conversation adjourn to any house the company shall choose, and there tarry till the hour of ten and no longer.

"And whereas the stays supporting the bells are liable to damage from unskilful hands, we agree that whoever hurts shall repair the same at his own proper charge.

"We make no rules for conversation, nor penalties for misbehaviour in it, resolving to render it innocently agreeable to each other; and whenever a breach of this rule is committed, that a reprimand be administered from the Society. In all cases and disputes not hereinbefore decided, the majority of the company shall determine, that so this Society, amicably begun, may be amicably carried on, and not meet the fate of others that have gone before it."

It would be well, I think, if such wise regulations were observed in all our belfries to-day. No doubt one so interested in bells and bell-ringing would often ring the "day belle" and curfew. This practice, which is still regularly continued

at Totnes, is probably a relic of the angelus bell, rung in old English fashion, just as when the monks lived in Totnes Priory, and mass was said in the conventual church of Totnes. However that may be, Totnes records show that for over four hundred years this practice has continued, and I trust that singular relic of ancient days may not be allowed to die out.

Little did Kennicott's fellow-ringers imagine that their leader was, in so short a time after drawing up these rules, to leave them, enter one of our universities, and step by step to rise to an unrivalled position as a scholar; but scarcely two years had elapsed before a great change took place in his circumstances, brought about by what would appear a trifling incident. Kennicott's sister was lady's-maid to the Honourable Mrs. Elizabeth Courtney, of Painsford, Ashprington, near Totnes, and in 1743 that lady had a narrow escape from death, she having eaten some poisonous herb which was concealed amongst some water-cress. The charity schoolmaster hearing of this, and the lady and her family being highly respected, he composed a poem on her recovery, which he "humbly inscribed to Kellond Courtney, Esq., and his Lady." It consists of no less than three hundred and thirty-four lines, and by this effusion he attracted the attention of the family, was taken by the hand, and in 1744 sent by his patrons to Oxford, where he became a student of Wadham College.

The poem was published for private circulation, and in 1747 he republished it, and in the preface speaks of being "indebted to it (under Providence) for the happiness he then enjoyed."

He also wrote Bidwell (Dartington) an epistolary poem to a Mr. Richard Hicks. It consists of 212 lines.

Though the Courtneys appear to have been the first to take notice of him, they were not his only patrons; for he dedicates one of his works to a long list of benefactors, first among whom were Kellond Courtney, Esq., and the Hon. Mrs. Elizabeth Courtney—a list which includes Archdeacon Baker, Rev. F. Champernowne, and H. Fownes Luttrell, Esq. And he says in the dedication, "'Tis to some of you I stand indebted for that generous subscription which has placed me in this theatre of learning, and to others of you for that favour and condescension by which my situation here has been rendered still more happy and delightful."

At college he distinguished himself by his application to the higher branches of theology, and in 1747 he published

Two Dissertations: the first on the Tree of Life in Paradise; and the second on the Oblation of Cain and Abel. This work brought him into notice, and he was soon after elected Fellow of Exeter College; and as a tribute to his merit was admitted to his B.A. degree without the usual fees, a year before the usual time. He took his M.A. degree in 1750, about which time he entertained a design of collating the Hebrew manuscripts of the Old Testament, a subject to which he called public attention by the publication of a pamphlet entitled, *The State of the Printed Hebrew Text of the Old Testament Considered.* The project, says Kennicott, was just this, to collate all the manuscripts of the Hebrew Bible in Great Britain and Ireland; and whilst this work was carrying on, that collations of as many of the best foreign manuscripts should be procured as time and expense would allow.

In 1753 he published his first volume on the state of the printed text of the Old Testament, which was translated into Latin, and published at Leipsic in 1756 by Zeller. In 1760 he produced a second volume on the same subject, which was also translated by Zeller, and published, with additions, in 1765. In these works he pointed out various discrepancies in the Hebrew text, and proposed an extensive collation of manuscripts.

The work was warmly encouraged by Dr. Secker, then Bishop of Oxford, and shortly afterwards Archbishop of Canterbury, whose example was extensively followed. Subscriptions were obtained, and arrangements made for carrying out the collation; and between 1760 and 1769 no less than £9,117 7s. 6d. were raised for the work. The collation was done partly by Kennicott, but chiefly, under his direction, by Professor Bruno, of Helmstadt, and others. The progress of the work, which occupied ten years, was made known by annual instalments, which were afterwards collected and published, with an introduction, in 1770.

To aid in the work, persons were employed to collate the manuscripts in all parts of Europe. Each received a copy of instructions in Latin, entitled "*Methodus varius lectiones notandi*," &c. In 1769 Dr. Kennicott stated that of the 500 Hebrew manuscripts then in Europe, he had himself seen 250; and of the 16 manuscripts of the Samaritan Pentateuch, 8 had been collated for him. Of the Hebrew, 140 had been collated throughout. Subsequently the numbers were increased, the collation extending in all to 581 Jewish and 16 Samaritan manuscripts, and 40 printed editions of Jewish works, &c.—of which, however, only about half were

collated throughout, the rest in select passages. The collation of the manuscripts of the Samaritan Pentateuch was very important, as these manuscripts were unknown in Europe at the time the last translation of our Bible was made.

In 1776 appeared the first-fruit of all this labour, being the first volume of his *Vetus Testamentum Hebraicum cum variis lectionibus*; the second volume appeared in 1780. The text is Van der Hooght's unpointed. The various readings are given below. Comparisons are also made of the Jewish and Samaritan texts of the Pentateuch, and of the parallel passages in Samuel and Chronicles, &c. To the second volume was prefixed a second dissertation on the Hebrew Old Testament, which had been published separately.

A great work like this was sure to be severely criticised; and the result of all this labour, it is said, on its first production disappointed the expectations that had been raised. Happily, however, this had not been anticipated, and thus a Herculean task was once for all performed with a thoroughness for which, to the end of time, scholars may well be thankful.

The labours of Kennicott were supplemented by those of De Rossi, professor at Parma, but on a somewhat different plan, and he collated a large additional number of manuscripts. Notwithstanding the immense amount of labour required for the collation of the manuscripts, and the preparation of his Hebrew Bible, Kennicott found time to write other works. Among them are critical remarks on Psalms xlii., xliii., xlvi., and lxxxix., *A Dissertation on the Samaritan Pentateuch*, *A Short Introduction to Hebrew Criticism*, *A Letter to J. D. Michaelis*, and a defence of his Hebrew Bible against the Gottingen Ephemerides. This last appeared in 1782, and throws some light on the conflicting opinions entertained of Kennicott's work abroad, and is interesting as apparently the last production of his pen published during his lifetime.

In 1761 Kennicott took his degree of D.D., and received from the crown a pension of £200. In 1767 he was chosen keeper of the Radcliffe Library, and three years afterwards a prebend of Westminster, which he afterwards exchanged for a canonry at Christchurch. He was also rector of Culham, a valuable living, which, it is said, he resigned because his studies prevented his residing on it. He devoted more than thirty years of his life to the study of the Hebrew text of the Old Testament.

It is said that after Dr. Kennicott had attained distinction as a scholar he came to Totnes, and was asked to preach in

the parish church. On going into the vestry prior to the service, his father, still the parish clerk, waited on him, and wished to assist in robing his son. The son, however, objected to his father doing so; but so persistent was the old man, that the son had to give way, and allow his proud father to robe him.

On the death of his father and mother Dr. Kennicott erected a table tomb over their remains in the churchyard on the north side of the parish church of Totnes. No date is to be found in the inscription, which is as follows:

AS VIRTUE SHOULD BE OF GOOD REPORT,
Sacred
 BE THIS HUMBLE MONUMENT
 TO THE MEMORY OF
 BENJAMIN KENNICOTT, PARISH CLERK OF TOTNES,
 AND ELIZABETH, HIS WIFE.
 THE LATTER
 AN EXAMPLE OF EVERY CHRISTIAN DUTY;
 THE FORMER
 ANIMATED WITH WARMEST ZEAL,
 REGULATED BY THE BEST GOOD SENSE,
 AND BOTH CONSTANTLY EXERTED
 FOR THE SALVATION OF HIMSELF AND OTHERS.

Reader,
 SOON SHALT THOU DIE ALSO,
 AND AS A CANDIDATE FOR IMMORTALITY,
 STRIKE THY BREAST, AND SAY,
 "Let me die the death of the Righteous,
 That my last end may be like his."
 TRIFLING ARE THE DATES OF TIME,
 WHERE THE SUBJECT IS ETERNITY.

ERECTED
 BY THEIR SON, BENJAMIN KENNICOTT, D.D.,
 CANON OF CHRIST CHURCH, OXFORD.

A good story is recorded of the worthy doctor, who it is said was a great lover of figs. On the walls of Exeter College there grew a patriarchal fig-tree, which in one particular year only produced one particular fig. This the doctor watched from day to day, and when it assumed substance and colour, to prevent any interference with it he affixed a card over it a few days before it ripened, bearing the words, "Dr. Kennicott's fig;" but the very morning on which he had hoped to eat it, an irreverent undergraduate stole it, and, worse still, reversed the card, and left it where the fig

should have been, with the slightly changed inscription, "A fig for Dr. Kennicott."

Dr. Kennicott died September 18th, 1783, in the sixty-sixth year of his age.

After his death, in 1787, a volume was published containing an introduction by him, which referred to his great work, and urged very strongly a revision of our present translation of the Scriptures by public authority. On reading the very clear and able arguments in favour of a revision one is surprised that nearly a century should have elapsed before the work was undertaken.

The volume referred to was published by three friends appointed by his will to examine his sermons and papers, and to publish, at the expense of his executrix, such as they might think at all likely to illustrate any parts of Holy Scripture; about half the volume he had proceeded to print before his death.

In addition to the introduction referred to the work contained remarks on selected passages in the Old Testament. These remarks include re-translations of a number of the Psalms. The volume concludes with eight sermons of the doctor's, which he also requested by his will might be published.

Whatever difference of opinion there may be as to the value of Kennicott's great work, it is certain that he was a most laborious and conscientious editor, and that his name must always stand high among Old Testament critics. His writings display great power and originality, profound learning, and independent thinking.

It is easy to record the rise of men who, like Dr. Kennicott, from low levels attain positions of fame; but are we not sometimes apt to forget how severe the struggle has been to overcome early disadvantages, and how great the industry and perseverance necessary to reach such eminence?

"Ah, who can tell how hard it is to climb
The steep where Fame's proud temple shines afar?"

Totnes boasts several sons who are examples of self-help, and who have attained positions of distinction, and not the least of these is Benjamin Kennicott.

THE FIRST VISIT OF CHARLES I. TO DEVON, 1625.

BY PAUL Q. KARKER.

(Read at Falmouth, August, 1878.)

IN the course of events incidental to the progress of the thirty years' war, the Elector Palatine, son-in-law of James I., was dispossessed of his hereditary dominions by the Catholic party under the Emperor Ferdinand and the King of Spain. James endeavoured to reinstate him, and sent an army of six thousand men under Count Mansfield to the Low Countries; where it effected nothing, and large numbers of the men died from want, or deserted. In the first year of Charles I. (1625), he, in continuance of his father's policy, dispatched both naval and military expeditions to the same end, and with almost the same result. He concluded alliances with the King of Denmark, the King of France, and the States General; and in order to give the King of Spain occupation in his own dominions, a great expedition was proposed for an attack on Cadiz. It was arranged to start from Plymouth in September, and Charles came himself to inspect the fleet and army there assembled. This royal visit to Devon has been mentioned by no county historian except Lysons, who found some notes among Chappel's papers; and in the following essay an attempt has been made to supply an almost omitted chapter of Devonshire history.

Early in May* warrants were issued to the deputy-lieutenants of each county ordering an impressment of a certain quota of men. Ten thousand† was the proposed number; of these eight thousand were to assemble at Plymouth, and the other two thousand at Hull. These latter were to be sent to the Low Countries, from whence a similar number of veterans were to be dispatched to Plymouth, and

* *Calendar of Domestic State Papers*, 1625, page 21.

† *Ibid*, page 23.

thus leaven the raw troops which would be gathered there with a little military experience. The date fixed for the rendezvous was May 25th; but very few were there by that time. In the Record Office are still to be found some of the numbers of men supplied to this expedition—Rutland, Radnor, and Cardigan sent fifty each; and Essex, Buckingham, Northampton, Berks, and Suffolk two hundred each. Devonshire was divided into four districts, of which Exeter was one, and supplied thirty men; East Devon, one hundred and twenty-three; North Devon, one hundred and twenty-three; and South Devon, one hundred and twenty-four.

The following interesting document gives the names and abodes of the men impressed in the Southern Division:

"This Indenture made the five and twentieth day of May in the first year of the raigne of our Sovraigne Lord Charles by the grace of God King of England, Scotland, France, and Ireland, defender of the Fayth, Betweene Sir Thomas Wyes of the noble order of the Bath, Knight, one of the Deputie Livetenants of the County of Devon of the one partie. And William Fortescue of Stoke Damarel in the said countie gentleman, conductor of the other partie: Whereas by verteu of letters from the Kings Most Excellent Ma^{tie} and letters from the Lords of his Ma^{tie} most honorable Privie Councell, directed unto the R^t Honorable Francis Lord Russell, Lord Livetenant of this Countie of Devon: and by verteu of letters from his Lordshipp unto the Deputie Livetenants of the said countie directed. The said Livetenants have levyed and Impressed fouer hundred men within the counties of Devon and Exon of which the said Live^{ts} of Exon (upon conference had with them) have undertaken for Thirty men and the other three hundred and seavintie men are levyed and Impressed by us the Deputie Livetenants within the aforesaid Countie of Devon. vizt. One Hundred twentie and three out of the East division; One Hundred twentie and three out of the North division; and One Hundred twentie and fouer out of the South division: which in all amounts to the full number of Fouer hundred men, to be conducted to their place of randavouz being at the porte Towne of Plymouth, on the abovesaid five and twentieth day of May, To be employed for the service of his Ma^{tie}.

Now these presents do witness that I the said Sir Thomas Wyes knight (one of the Deputie Livetenants) the daye and yere abovesaid at Plymouth in the said Countie of Devon, Have delivered over and by these presents do deliver over, unto the said William Fortescue: the foresaid One Hundred twentie and fouer men, whose names surnames and places of abode are hereunder expressed; to be by him kept in readiness untill such time as he shall receive warrant for delivering them over unto such commanders as shall have power for their receiving, which said One

Hundred twentie and fouer men impressed out of the South division, the said conductor William Fortescue doth by these presents acknowledge to have received of and from me the afore-named Sir Thomas Wyse, Deputie Livetenant at Plymouth aforesaid the day and yere abovesaid to the end and purpose before in these presents expressed.

In witness whereof the parties abovesaid to these present Indentures his hand and Seale Interchangeable hath put.

Geven the day and yere first above written. Anno Dom' 1625.

Philipp Barry	of Ipplepen
William Kemp	of Woodland
Thomas Turpyn	of Littlehempson
William Carpenter	of Newton Abbott
Roger Glandvill	of the same
Henry Ireland	of the same
William Sithcott	of Coffinswell
John Tooker	of S' Marye
Gabrael Vidimus	of Berry Pomery
Christopher Mudge	of the same
John Searell	of Paynton
John Bridham	of Brixham
William Harvie	of Churstonferris
John Landbole	of Ashburton
George Geeke	of the same
Thomas Colcott	of Heighweeke
William Carpenter	of Ilsington
James Shilston	of Morton
William Endicott	of the same
William Easton	of Bovietracie
Michael Tavernor	of the same
Frances Hull	of the same
George Gaye	of Topsham
Richard Carpenter	of the same
Gabrael Lake	of Poltimoor
Thomas Lane	of the same
Thomas Olliver	of Stoke Cannon
John Derrant	of Drewstenton
John Battishill	of Southtawton
Alexander Wav	of Chagford
Richard Pudbery	of Affington
Barnard Salter	of Christo
Edward Mounstor	of Bredford
Vallentene Amore	of the same
Richard Harris	of Tedburne
Christian Hawkins	of Westallington
Lawrance Sparkwell	of Churchston
John Prist	of Kingsbridge
John Tamm	of the same

Thomas Glandvill	of East Allington
John Trigs	of Dartington
William Lane	of Tarmoune
William	of Shesford
William Crovcomb	of Newton S ^t Cyers
Nicholas	of Colbrook
Elezans Lange	of Buckfurslee
Richard Maddock	of the same
Richard Wyott	of North Hewish
John Rendle	of Crediton
Peter Trencher	of the same
Samuell Pope	of the same
Henry Johns	of the same
John Maye	of Sandford
William Broadmaid	of the same
William Henwood	of Tottnis
Leonard Duck	of the same
Leonard Moor	of the same
Leonard Nicholas	of the same
Alexander Wood	of the same
Hugh Wallis	of the same
Thomas Band	of the same
John Snowdon	of the same
Henry Peeter	of the same
John Pearce	of Ashberton
Peter Stoyell	of the same
Nicholas Pottell	of Dartmouth
Symon Cradock	of the same
Moyses Scambe	of the same
Pancaris Bovie	of Blakeawton
Thomas Willinge	of Awton Gifford
Henry Kelland	of Ashbrenton
Thomas Shutt	of Southpoole
Emerideth Capper	of Slapton
Ambrous Berry	of Washfield
James Pasmoor	of the same
George Puddicomb	of Shabbrooke
William Crute	of Shidley
Thomas Prest	of the same
Andrew Anthony	of Bishopps Taynton
Thomas Merry	of West Tynmouth
George Casely	of Ashton
Richard Dingell	of Kenton
David Thomas	of Exminster
Anthony Rogers	of the same
John Stephens	of Kenn
Dannyel Gitson	of Powdrum
John Hole	of Eede

Richard Lucumbe	of Shillingford
John Buffett	of Liston
John Hunt	of Okehampton
Michael Bartlett	of the same
John Pomery	of Brattan Clavelly
John Saiant	of Thrishelton
Henry Standon	of Marytavie
William Willis	of Sourton
Thomas Horton	of Bridistow
John Fitz	of Tavistock . gent
Benianien Cumbe	of the same
Henry Tooker	of the same
Nicholas Gruite	of the same
Henry Saunders	of the same
Thomas Rowe	of Milton Abbott
John James	of Wakhampton
Walter Damryell	of the same
Robert Mitchell	of the same
William Rider	of Beerferris
John Olliver	of Stonehouse
William Dawkinge	of the same
Joseph Pomery	of Weston Peverell
Richard Tyllan	of Plymouth
William Beswarthick	of Modbury
Zakery Jarvis	of the same
John Walker	of Holberton
Anthony Baker	of the same
William Chubb	of Ermington
Edward Blackaller	of Ugborough
Richard Hameblinge	of Plymouth
Thomas Whiddon	of the same
Thomas Snellinge	of Plympton Morish . gent
Tymothy Pollexphen	of Yeampton
Symon Ager	of the same
Indico Bennet	of the same
Henry Damarell	of Brixon
Jonas Bown	of Plympstock

Signed Thomas Wyes
Willia Fortescue

This document, of which the seals are wanting, is endorsed, "A role of impressed souldiers in the counties of Devon and Exon," and is referred to in the *Calender of Domestic State Papers*, 1625, at p. 28 (May 25). The spelling of the original has been strictly adhered to; but the parchment being damaged by damp in one or two places, the reading has been somewhat obscured. It may be safely assumed that the

whole of these men were peasants or artizans, with but two exceptions; viz., John Fitz, of Tavistock, and Thomas Snellinge, of Plympton Morish, who are dignified by having the word "gent" appended to their names. Doubtless these were members of the well-known Devonshire families connected with Tavistock and Plympton.

It is interesting, in looking through this list, to compare the quota supplied by the different towns and parishes. Times have changed since then, and some of the parishes have changed with the times. For instance, the relative sizes of Totnes and Torquay are somewhat different. Totness sent nine men, and Tarmoune, or Tormoham, or Torquay, sent one, William Lane, a member of a very old and still well-known family.

From various sources we are able to describe fairly accurately the mode adopted for selecting the recruits. The Deputy-Lieutenant gave impressment warrants to such person as he thought fit in each district, with orders to bring him so many from each parish, according to a list supplied him, leaving the matter of choice entirely in his hands. This individual proceeded to the district assigned to him, and in each parish had brought before him the list of men liable to serve. The only exceptions were the men in the train-bands.* The parish constable, and perhaps the magistrate, were present on the occasion; but the recruiting officer had the game entirely in his own hands, and did just what he liked, and generally managed, by "pricking" † more than he had any claim to, and selling them discharges, to make a purse for himself. The men selected were left in charge of the constable, with orders to produce them at the rendezvous for the district, under penalty of having to serve ‡ himself, if the men were not forthcoming. The gaols were frequently called on for contributions. The Deputy-Lieutenants§ of Suffolk during this impressment wrote to the Council, "that two prisoners had been convicted at the last assizes for small offences; the judge would have allowed them to claim the benefit of their clergy, but could not, as they had had that on some previous occasion. They therefore left them in prison to the end, that if the Council gave consent, they might be pressed for his Majestie's service."

The men from each county or subdivision were brought

* *Fifth Report of Hist. MSS. Commission*, p. 401.

† "Roberts's Memorandum Book," in this volume of *Trans. Devon Assoc.*

‡ *Fifth Report of Hist. MSS. Commission*, p. 401.

§ *Calendar of Domestic State Papers*, p. 39.

by their parish constable to some appointed place, and handed over to the officer who had already selected them, called the conductor, who gave a receipt for them to the constable, and who then undertook to deliver them to their future officers at the general rendezvous. The county was supposed to pay the cost of impressment, to supply the men with coats, and the conductor with money* sufficient to pay all expenses on the march to their destination. It is easy to imagine what a terrible infliction the continuous march of troop after troop of these men must have been to the inhabitants living on the line of route. Walter Yonge,† in his *Diary*, implies that it was one of the greatest of plagues.

The mode adopted for finding food for powder could not on the whole be considered satisfactory. Shakespere has described the scene in a much more graphic manner than can be imitated by any number of quotations from the documents in the State Record Office. He had evidently seen impressment, knew the method and its results, and his description of Falstaff's ragged regiment is just what might have been expected from such a process.

"If I be not ashamed of my soldiers, I'm a soused gurnet. I have misused the King's press damnably. I have got, in exchange of a hundred and fifty soldiers, three hundred and odd pounds. I press me none but good householders, yeoman's sons; inquire me out contracted bachelors, such as had been asked twice on the banns; such a commodity of warm slaves, as had as lieve hear the devil as a drum; such as fear the report of a caliver worse than a struck fowl or a hurt wild duck. I pressed me none but such toats-and-butter, with hearts in their bellies no bigger than pins' heads, and they have bought out their services; and now my whole charge consists of ancients, corporals, lieutenants, gentlemen of companies, slaves as ragged as Lazarus in the painted cloth, where the glutton's dogs licked his sores; and such as indeed were never soldiers, but discarded unjust serving men, younger sons to younger brothers, revolted tapsters and ostlers trade-fallen, the cankers of a calm world and a long peace, ten times more dishonourable ragged than an old-faced ancient: and such have I, to fill up the rooms of them that have bought out their services, that you would think that I had a hundred and fifty tattered prodigals lately come from swine-keeping, from eating draff and husks. A mad fellow met me on the way, and told me I had unloaded all the gibbets and pressed the dead bodies. No eye hath seen such scarecrows. I'll not march through Coventry with them, that's

* The cost of impressing the Cardigan men (fifty), coats, and conduct money came to £90 10s.—*Calendar of Domestic State Papers*, p. 40.

† *Walter Yonge's Diary*, p. 82.—*Cam. Soc. Pub.*

flat : nay, and the villains march wide betwixt the legs, as if they had gyves on ; for indeed I had the most of them out of prison. There's but a shirt and a half in all my company ; and the half-shirt is two napkins tacked together and thrown over the shoulders like a herald's coat without sleeves ; and the shirt, to say the truth, stolen from my host at Saint Alban's, or the red-nose inn-keeper of Daventry. But that's all one ; they'll find linen enough on every hedge."*

The clothing of the men was doubtless made a nice little job for some *protégé* of the Deputy-Lieutenant, who acted on Falstaff's theory, that "they would find linen on every hedge." The Commissioners at Plymouth complained to Secretary Conway that the men of Devon were "badly clothed, owing to the defect of one Pinney, of Exeter."† When Sir John Ogle, who was to organize the expedition, reached Plymouth, he wrote to the Council, that "the number‡ of officers was very insufficient ; the men were unfit by reason of age, impotency, and sickness ; their clothes none of the best, being only cassocks—no shirts, shoes, stockings, or breeches ; those out of Hampshire were even without cassocks."§ And Sir W. Leger, writing only a few days before the departure of the expedition, says, "The army is in a miserable condition for want of clothing, many not having the wherewithal to cover their nakedness."||

In order to infuse some sort of discipline among the wretched creatures assembled at Plymouth, the King empowered the Mayor of Plymouth and Sir John Ogle to administer martial¶ law in the counties of Devon and Cornwall ; for it was found impossible to billet the whole of the men in and about Plymouth, and some of them were drafted into the villages of the neighbouring county. In July Captain Robert Gore,** acting as sergeant-major, inspected those quartered in Devon ; and Captain Edward Leigh†† performed the same duty for those in Cornwall. The former reported that "there were 4,534 serviceable men, 196 unserviceable, 9 runaways, and 2 dead ;" the latter intimated that in his division there were 2,455 serviceable, and 192 unserviceable. So that out of 8,000 who were ordered to assemble at Plymouth, only 7,388 were to be accounted for, and of these nearly 400 could not pass the sergeant-major or adjutant of those days.

* *Henry IV.*, act iv. scene 2 ; see also second part of *Henry IV.*, act iii. scene 2. † *Calendar of Domestic State Papers*, p. 84. ‡ *Ibid*, p. 43.

§ Cassocks, "a loose outward coat, particularly a military one."—HALLIWELL. || *Cal. of Dom. State Papers*, p. 102. ¶ *Ibid*, pp. 23, 42.

** *Ibid*, p. 69.

†† *Ibid*, p. 78.

The allowance made to each soldier was 8d.* per day, or 4s. 8d. per week. Of this, 2s. 6d. per week was allowed to pay for food and drink, and the remainder was retained to provide two suits of clothes a year. The yearly pay of each soldier was thus supposed to cost the government £12, of which £5 10s. was kept back for clothing, &c., and £6 10s. was assigned for his nourishment, less the hundredth† penny which the paymaster kept for himself. Complaints were made that that 2s. 6d.‡ was not sufficient to provide meat and drink; and even this small sum the hungry soldier did not often get; for very soon the supply of money ran short, and then Sir John Ogle's letters teem with prayers for this the most requisite of all the munitions of war. On July 30th he wrote§ "that the treasury was exhausted, and that he could not satisfy with words the hungry bellies of the souldiers, nor the empty pockets of the hosts." Again, on August 12th, the commissioners write,|| "they are not humble petitioners, but importunant solicitors for a second supply of money. The hosts have not been paid these three weeks, the souldiers complain, their diet is impaired, and they are of a dejected spirit; the countryman also complains of the charge and trouble of the souldiers, and that although his money is not paid, the subsidy is shortly to be collected."

The Londoners did not take this state of things quite so quietly as the recruits from the provinces, and consequently mutinied;¶ and order was not restored until one of them had been hanged by martial law.

On August 30th the troops** from the Low Countries (2000) arrived, under Captain W. Courtenay. But by this time Plymouth and the neighbourhood must have been bordering on anarchy. The commissioners sent letter after letter to the council, begging and praying for money.†† "The poor countryman is no longer able to entertain the souldier, and in some places has thrust him out of doors, whilst the souldier has taken away the countryman's goods, robbed on the highway, carried away sheep before the owner's face, and dressed them in the open view of the world."

By September 12th the army was still 500 short of 10,000, and an urgent press‡‡ for that number was made in "the counties of Dorset, Devon, Somerset, and Cornwall, to be conducted to Plymouth with all speed."

The medical department of the expedition seems to have

* *Calendar of Domestic State Papers*, p. 38.

† *Ibid.*, p. 60.

‡ *Ibid.*, p. 38.

§ *Ibid.*, p. 77.

|| *Ibid.*, p. 83.

¶ *Ibid.*, p. 84.

** *Ibid.*, p. 92.

†† *Ibid.*, p. 95.

‡‡ *Ibid.*, p. 103.

been particularly weak, for the government pressed one William Goodridge,* of New Sarum, to serve as surgeon, and for whose release the mayor and burgesses petitioned, on the plea that he had borne the office of mayor, and was now alderman; that he was about the age of three score, subject to gout and stone, and had not sufficient skill in chirurgery for his majesty's service. What answer was granted to the petition is not known; but doctors must indeed have been very scarce to necessitate the compulsory service of an old and sickly man such as Goodridge is described to have been.

At this time the plague was killing thousands each week in London, and the Court had moved to Windsor to escape infection. Here one of the Royal Guards† died of the complaint; and once more the Court moved, and this time into Hampshire, the King going to Beaulieu,‡ in the New Forest, and the Queen to Titchfield. Rumours were common in Oxford§ to the effect that the King himself had been ill of the plague, but that he had recovered.

Leaving the Queen in Hampshire, Charles determined to see for himself into the condition of his army at Plymouth. He reached Hinton St. George, near Crewkerne, the seat of Mr. Powlett, afterwards Baron Powlett, on September 14th,|| where he slept, the Duke of Buckingham, the Earl of Holland, the Earl of Derby, Sir Robert Killegrew, and others of his suite sleeping at Ash, the seat of the Drake family, in the parish of Musbury. The next day, passing through Colyton, where he was joined by the Earl of Essex and the Earl of Arundel, he made for Newton Abbot, his next resting-place. The plague had been very busy in Exeter, so much so that it required an order from the Court to compel the Mayor,¶ Thomas Walker, to remain at his post, though that worthy would have much preferred withdrawing himself to the country, and leaving the city and the plague to get on together as best they could. Under these circumstances the King did not deem it advisable to enter the city, but crossed the river, probably at Topsham, and was met by the High Sheriff** and his retainers at Powderham. At the dinner at Ford, near Newton Abbot, the honour of knighthood was conferred on Richard Reynell,†† of Ogwell, nephew of Sir Richard Reynell, the owner of Ford, on Thomas Reynell,

* *Calendar of Domestic State Papers*, p. 97.

† *Court and Times of Charles I.*, p. 44.

‡ *Ibid.*, 47.

§ *Ibid.*, 49.

|| *Walter Yonge's Diary*, p. 86. Cam. Soc. Pub.

¶ *Izacke, History of Exeter.*

** "Roberts's Memorandum Book."

†† *Diary of Walter Yonge.*

his Majesty's sewer, and John Yonge, son of Walter Yonge. Lysons,* quoting from Chappell's collections, gives the steward's account for the provisions at the royal feast :

"The provisions for the first visit consisted of a buck and a side of venison sent by Mr. Reynell of Ogwell; and a buck from Mr. Pawlett of Henton. Among the fish three dories, two mullets, two gurnets, 25 peels, two salmons, and eight pair and a half of soles. Of game and fowls 140 partridges, seven pheasants, 61 chickens, 46 capons, ten ducks, 14 pullets, six geese, 71 turkeys, 28 pigeons, one pea hen, two mallards, two green plovers, eight plovers, one gull, three dozen of larks, 38 rabbits, and one hare, besides mutton, veal, lamb, etc. Six artichokes were among the vegetables. The whole expense of the first entertainment was £28 13s. 5d."

The ceremony of knighthood was performed in the dining-room, in the presence of the wives of the new knights and "divers lords and ladies," after which the King kissed the ladies.

On his road to Plymouth the King visited the good town of Totnes, and the Mayor, Robert Gwyne, has left an account of the expenses incidental to his Majesty's reception. A fair purse containing £200 was presented, and an oration (the orator was paid £1) was delivered. Of the two the King doubtless preferred the purse and its contents. Sir Edward Seymour, of Berry Castle, and Sir Edward Giles, one of the borough M.P.'s, with divers other gentry, were invited to be present at his Majesty's entry, and a good deal of sack and claret was provided for their delectation. The King's servants received between them £33 3s. 4d. Altogether this visitation of Royalty to the town of Totnes must have been an expensive affair.†

We know nothing of what the King did at Plymouth, or where he stayed while there. There is a document among the Plymouth records which proves that the visit of the king was a source of expense to the town, inasmuch as his servants and retainers received certain fees to the amount of £33 3s. 4d.

"Mayor of the towne of Plimworth

Ffees dewe to his Ma^{ty} servants from the said Mayor for his homage to his Ma^{ty} passing through his saide towne the fiveteene day of September 1625

* Lysons' *Devon*, p. 566.

† *Antiquities of Totnes*.—ED. WINDEATT.

To the gent vshers dayly wayters . . .	vl
To the gent vshers of the privy Chamber . . .	vl
To the S'aints at Armes . . .	iiij' vj' viij ^d
To the Knight harbinger . . .	iiij' vj' viij ^d
To the Knight Marshall . . .	xxs
To the gent vshers Quarter wayter . . .	xxs
To the sewers of the Chamber . . .	xxs
To the yeomen vshers . . .	xxs
To the groomes and pages . . .	xxs
To the footemen . . .	xls
To the fower yeomen . . .	xls
To the Porters at the gate . . .	xxs
To the S'aint Trumpetter . . .	xxs
To the Trumpetters . . .	xls
To the Surveyor of the wayes . . .	xxs
To the Yeoman of the fields . . .	xs
To the Coachman . . .	xs
To the Yeomen harbingers . . .	xxs
To the Jester . . .	xs
Sm ^a xxxiiij ^a iiij' iiij ^d	

Rec the some abovesaide this 23 of Septem 1625 to the use of
hi mats servants by mee

THO KYNASTON."

Some notion of the King's retinue may be formed from this list, and evidently he had a considerable following. The mayor of Plymouth at this date, according to Mr. Worth's edition of James Yonge's *Memoirs*, was Thomas Ceely, and his year of office must have been far from an easy time. Thomas Ceely did not leave a record of his official difficulties and labours, which is a great loss. It would be exceedingly interesting to see a picture of a county town during its occupation by an army such as was gathered together on this occasion.

It would appear from an expression in Roberts's *Memorandum Book* that the king held some sort of a review, as he gives the number (country-side rumour) of troops "that did trayne before his Majesty." Charles was back again at Ford House by Saturday, the 24th, so did not see the fleet set sail. On this occasion another grand banquet was given, of which the steward's account is also to be found in Lysons:

"For the second entertainment, Sir Amias Paulet gave a buck, Mr. Luff of Torre a doe, Dr. Clifford a hunted teage (a doe of a year old); Mr. Beard gave a mutton, killed and dressed. The fish consisted of eight score mullets, three dozen and a half whittings, four salmons, seven peels, seven

dories, twenty-one plaice, twenty-six soles, forty-eight lobsters, 550 pilchards, etc. Among the fowls and game, sixty-nine partridges, five pheasants, twelve pullets, fourteen capons, 112 chickens, four ducks, six geese, thirty-seven turkeys, sixty-nine pigeons, ninety-two rabbits, one barnacle, one hernshaw, twelve sea larks, eleven curlews, twenty-one and a half dozen of larks, one heath-pult, two nynnets, six sea-pyes, one stone curlew, four teals, three pea-hens, and two gulls. Among the more substantial provisions were six oxen and kine, five muttons, two veals and a half; besides several entries of ribs of beef, quarters of mutton, chines, tongues, a side of lamb, and a Westphalia gammon. The liquors enumerated are, two hogsheads of beer, a barrel of canary wine, and thirty-five quarts of white wine. The whole expense of the second entertainment was £55 5s.

The next day being Sunday, the King attended divine service at Wolborough Church, after which he touched a child for the evil, which, it is to be hoped, was much the better for it. The following morning the King returned by the same route as he came, and reached Hynton St. George the first day.

The expedition the King came to inspect left Plymouth in October, and after narrowly escaping a storm reached Cadiz, its destination, where it failed to effect anything whatever; but for details of its history, reference must be made to the national historian of that date. It need only be said that it was badly managed from beginning to end, and turned out a miserable failure.

ADDENDA.—The following is an extract from a journal supposed to have belonged to Sir Richard Reynell, of Oggwell:

"1625. King Charles, the Duke of Buckingham, with divers other lords, came from Mr. Pawlets of Keynton, Wednesday the 15th of September 1625, to my Unkell Sir Richard Reynell's House of Forde, and the Thursday after dinner in the dining chamber, which was then the Chamber of Presence, knighted myself and my brother Sir Thomas Reynell, who was his Magestie's servant and sewer in ordinary to his Person, in the presence of our wives and divers Lords and Ladies, saying to us, God geve you joye, which wordes he also used to our wives, and kiste them at his departure towards Plymouth, wheare, having settled Businesses concerning his Fleete, which Expedition was for Cades, returned again unto my Unkell's house the 24th being

Satterdaye, and the Sondag was at Woolborough Church, and at my Unkell's suite cured a Child which was troubled with the king's evil. The Mondaye his Magestie returned to Heynton. Mr. Pawlet was shortly after made a Lorde."

It will be seen from this extract that the King was at Ford House on September 15th. Walter Yonge's *Diary* gives the same date; Kynnaston must therefore have made a mistake in his account by saying that the entry into Plymouth took place on that day.

ON SOME ANCIENT DOCUMENTS RELATING TO CREDITON MINSTER.

BY J. B. DAVIDSON, M.A.

(Read at Paignton, August, 1878.)

THE subject of the following paper is a manuscript in the British Museum, marked Cotton Roll II. 11. The roll is four feet nine inches long, and nine inches and a quarter wide. It contains altogether twenty-one documents, all relating to Crediton. Of these the photograph represents the first five, and upon these it is now proposed to offer a few remarks.

It should be observed that the subject is not entirely new. The whole roll was commented on in a paper read by Mr. Edward Leven before the British Archaeological Association at Exeter, in 1861,¹ and the fourth document of the series was the subject of a paper by Mr. John Tuckett, also read by Mr. Leven on the same occasion.²

We now proceed to print these documents as they stand, appending in a note some words and phrases, from which it is possible that the strange forms to be found in this MS. may have been derived, or of which they may be imitations.

I.

Hich³ egger⁴ bischob be bude⁵ alle mīne afther comende
to cridintones mīnīstre. þat þe geuenisse⁶ þat hich be het⁷
afther þat þat hich for soc sainte marie minīstre for mire pride

¹ *Journal of the Archaeological Association*, v. xviii., p. 134.

² *Ibid* 92. The writer has had the advantage of seeing a translation of the Saxon instruments which was used by Messrs. Leven and Tuckett, in 1861, made by an assistant of the late Dr. Bosworth, but not corrected or authorised by him. This translation is partly printed in Mr. Leven's paper. It has been consulted and used, but not implicitly followed, here. To Mr. Tuckett we are indebted for having first called the attention of Mr. Leven, and through him of the Archaeological Association, to the subject.

³ Ic. ⁴ Æðelgar. ⁵ bebeode. ⁶ i.e. for-gifennes. ⁷ begeat.

and to rome hy wende¹. and þar hich hontromede² sove yer³
and more an thar me bífóre hylomp.⁴ þe reue quene on
heuene marie. æd nedede⁵ me to scrifte go. to þan holiapopa⁶
leon and be his lore⁷ do. And he me radde⁸ anbidia ones
similis-amnis⁹ on rome. and behithe¹⁰ to gíuenisse to bote
mire mere leuedie¹¹ and to mire cherche. And þar hich be
geth¹² of souentíne archebischobes to þousent dages to giúen-
esse of hure sínna. alle þane mínistre críditones agínnas¹³ an
godíevas¹⁴ of bute hende heuereche day to coínde. and the
worke bítrende¹⁵ and for adþelstan synge.¹⁶ And of oþer
bischopes on estende romes burg and on westende of þas
mountes mougeus feour þousent dages. and sonne¹⁷ dages.
.i. of hoþer archebischopes .i. bissopes on þísse side þas
mountes on wale londes þe ích alle hí sogte¹⁸ hoþer bí wise
sende. so mí scrift was. þru þousend dage .i. souene. Of
þru archebischopes on bruthude .i. of hyre onderbischopes.
on þousent dages .i. sixsti dages. Of feour archebischopes
of hírlonde .i. of hire ondersetete bischopes nunhenne¹⁹
honderd dages. .i. tín dages. And þo²⁰ hich com hom to þan
gete²¹ on þan cherchay.²² hich sílf sínfol hí astahede²³ þar on
hondred dage ín helf þan gete euemore²⁴ wo so²⁵ bith²⁶ for
wrecche²⁷ edger. And þo hich halgede þane cherichay at
hechere²⁸ hurne at hondreíd dage. And eft hich buspide²⁹ to
rome for mire laothere³⁰ to bote .i. se holiapopa líon þay
geuenisse íuasnede³¹ .i. morede hit míd on þousend dage .i.
a wirgede alle þaye þe hit aspíde³² .i. þane mínístr of
crídfantone wíp sette. Suíma díez xii. cccc. lxxx.

II.

Hondret bíschoe. gíef³³ on hondred dage. Þorte bischop on
hondreíd dage. .i. bí het³⁴ þrou³⁵ hondreít dage. Leueger
bischop bí het to hondreít dage. Eadb³⁶ bischop bí get frou
hondreít dage. and tín dage. Eansb³⁷ bischop bí get sonne
hondreít dage. Ealnod bischop bí get and hondreit dage.
Alger bischop bí het þru hondreit dage .i. souentí and þru
dages. Eadluf bischop bí get sixstí dage. Luhíng bischop
to hondreit dage. and on oþer leon popa hí ívasnede³⁸ on
echenisse ant aywilday. Suíma díez. ij. D. xl. iij.

¹ gewende.² un-trumode.³ seofon.⁴ gelamp.⁵ nydde.⁶ þám halgan papan.⁷ lare.⁸ rædde.⁹ an 'semmissis-annus?'¹⁰ begitan.¹¹ leode.¹² begeat.¹³ agínnendas.¹⁴ godíendas.¹⁵ betriende.¹⁶ cyng.¹⁷ seófon.¹⁸ gesóhte.¹⁹ nigon.²⁰ sonne.²¹ to þam geate.²² circan-hege.²³ astealde.²⁴ gít æfre má.²⁵ hwá swa.²⁶ bit.²⁷ wræcca.²⁸ ægþere.²⁹ be-síðode.³⁰ leahtere.³¹ afæstnode.³² aspiwð.³³ gaf.³⁴ behet.³⁵ þreo.³⁶ afæstnode.

III.

Her kied on þise íwritē þat hich luuig¹ bīschop at míne fuyrsipe² wram cdition³ hī minstre to þare cherche of examchestre for míne leue broþeren⁴ to h wreyrighe⁵ at míne out ganhes⁶ íuasnede⁷ þay geuenísse þat egger þe luf minetheude⁸ bīschop bī tende⁹ into cđiamtones mínistre and heg¹⁰ þat alle oþere bīschopes sídþe¹¹ of míne dages were ígeue¹² and bī gíte¹³ of oþer bīschopes hek¹⁴ hich habbe out igadere¹⁵ of bokes fale¹⁶ .ŕ. idó¹⁷ in on oþe masse boc at sainte marie weuede¹⁸ to gadre hī broght¹⁹ þar ma hīt schel í su.²⁰ And in on oþer boke þat hatte²¹ penítencíalis bodde to houre²² and ich hit ítrímde²³ mīd on hondrert dages of bute ende and ích on²⁴ cursíe þat hit oþeruise ísette²⁵ .ŕ. hek alle þare churcha yvo.²⁶

Summa toscí²⁷ veníe xli aññ cc. dies .ŕ. xvi dies.

Et p²⁸ hoc dñs W Exon²⁹ ep³⁰ dedít ad colib³¹ altare eēce³² xlii dies in remissionē pcco³³.

IV.

In noīe dñi nñi ihũ xpísti. Ich eadnod bīschob kíþe on þis prítan þat ihc onborgede .xxx. marca goldes be lead píte¹ to míne lond reddíngē at beorhtuoðe . and ich ge sealde hím ane gurdy londes to underwedde bī cridia to þan foreword þat he habbe hīs deis . ou² hīs deis be queþe þane . schuch þā þe hím luuest bu.³ þe in þan londe stent . þis hīs sīnt þalondes ímeara . þare gurd bī cridia. Erest on schokebrokes ford . þanne east on þan pape . on þā litel gore . estward suð . on þā dede lake on cđia. Opon gen strem . on þan elpenían aker⁴ . þanne est on þā h⁵pa⁶ þe est⁷ eft on schokebroces ford . þis her is towítnesse cnut chīng wolstan archebīschop .ŕ. luping archebīschop .ŕ. britgloþ bīschop, and gednod bīschop, and burthloþ bīschop . ād adþelpíne bīschop

¹ Liuing.

² forð-sið.

³ mina leofena broðra.

⁴ to-hreowe.

⁵ ut-gang.

⁶ afæstnode.

⁷ leof minre þeode.

⁸ betynde.

⁹ eac.

¹⁰ siððan.

¹¹ gifen.

¹² behet.

¹³ eac.

¹⁴ ut-gegadrod.

¹⁵ feala.

¹⁶ gedón.

¹⁷ weofod.

¹⁸ gebróht.

¹⁹ þær man hit sceal seon.

²⁰ hæst.

²¹ bodde to-hyrde (P)

²² getrymede.

²³ an.

²⁴ gesette.

²⁵ gefynd.

²⁶ totius.

²⁷ adcolentibus.

²⁸ Be leód-gewiht; i.e. by national or common-law, as opposed to customary, weight. In a charter of Cnut, x.c.d. dccxlv. (iv. 37), mention is made of silver marks measured by "hustings" weight.

²⁹ And offer his dægas hit becwæþe þam swilce þe him leofost beo.

³⁰ ænlipigan etc.

³¹ herpæþ.

³² "Est" is undermarked to show that it was a mis-script for "eft."

and bristyne biſchop . and adþelpold elþerne man . and
adþelpold abbot . and þat hyred of exancestre . and þat hired
of cdihamton⁹ . and þis ſþidde¹ þe biſchop þane borg ton to
exancestre and to tottenesse . and to lidauorde . and to
beardeſtaple. Pax ſit hoc ſuantibꝫ . ⁊ . inſſn⁹ ſit hoc fran-
gentibꝫ . And þiſſes iþrites idoua² iſ on cridiſamtone . mid
hure elder boken.

V.

Universis sanctæ matris ecclesiæ filiis hanc præsentem
paginam visuris vel audituris, Willelmus Briwer, miseratione
divinâ Exoniensis episcopus, æternam in Domino salutem.
Noverit universitas nostra quod nos, divinæ caritatis intuitu,
indulgentias suprascriptas per diligentiam prædecessorum
nostrorum episcoporum Creditonensium et Exoniensium
diversis temporibus ecclesiæ Sanctæ Crucis et Ipsius Cru-
cifixi Genetricis semper virginis Mariæ de Crediton, ad piam
et perpetuam consolationem fidelium adquisitas, quas oculis
propriis inspeximus, atque coram nobis recitari fecimus, et
sicut ex antiquis dictæ ecclesiæ instrumentis veraciter sus-
cepimus, ipsas a summis pontificibus misericorditer fuisse
confirmatas, dictorum prædecessorum nostrorum facta per
omnia in hâc parte illæsa conservare volentes, et perpetuâ
permanente auctoritate nobis a Domino creditâ, dictas indul-
gentias, necnon et sententiam quam memorati prædecessores
nostri in perturbatores seu violatores earundem provide
tulerunt—confirmavimus. Nos itaque, de Dei omnipotentis
misericordiâ, et omnium sanctorum meritis confisi, gratiam
gratiæ accumulare cupientes, omnibus dictæ ecclesiæ benefac-
toribus, sive piæ devotionis causâ illam quocunque tempore
visitantibus, deinjunctâ sibi pœnitentiâ quadraginta dies miseri-
corditer relaxamus. Et, ne istud futuris temporibus aliquibus
vertatur in dubium, præsentem paginam, secundum consuetu-
dinem temporis moderni, sigilli nostri impressione duximus
roborandam.—Datum Criditonæ, anno gratiæ m^o cc^{oo} xxx^o vi^o.
xij^o. kal. Januarii, scilicet die sancti Thomæ apostoli.

TRANSLATION.

I.

I, Egger (Æðelgar), bishop, declare to all my successors
at Crediton minster concerning the indulgence which I
obtained after that I forsook St. Mary's minster (i.e. Crediton)
for my pride, and went to Rome. And there I fell sick seven

¹ gecyðde.² gedón (P)

years and more, and there there appeared before me the compassionate queen in heaven, Mary, and bade me go to shrift to the holy Pope Leo, and act according to his direction. And he told me to remain another half year at Rome, and obtain indulgence for the benefit of my people and my church. And there I obtained from seventeen archbishops two thousand days' indulgence of their sins for all the founders and benefactors without end of Crediton minster, who should day by day come and aid the work; and for King Æðelstan. And from other bishops on the east of the city of Rome, and on the west of Mons Jovis, four thousand and seven days. And from other archbishops and bishops on this side of the mountains in Wale-lond, whom I sought, or to whom I otherwise sent—so my shrift was—three thousand and seven days. From three archbishops in Bruthude, and from their under-bishops, one thousand and sixty days. From four archbishops of Ireland, and from their under-bishops, nine hundred and ten days. And when I came home to the gate of the church enclosure, I, my sinful self, established there one hundred days for the benefit for evermore of him whosoever shall pray for the wretch (exile) Edger (Æðelgar). And when I consecrated the church enclosure—at each corner, one hundred days. And I journeyed back to Rome for the benefit of my health; and the holy Pope Leo confirmed the indulgence, and increased it by one thousand days; and cursed all those who should reject it, and oppose the church of Crediton. Total of the days, 12,480.

II.

Bishop Hondret gave one hundred days. Bishop Porte one hundred days. Bishop Leveger promised two hundred days. Bishop Eadberht promised four hundred and ten days. Bishop Eansberht promised seven hundred days. Bishop Ealnod promised one hundred days. Bishop Alger promised three hundred and seventy-three days. Bishop Eadulf promised sixty days. Bishop Living two hundred days. And another Pope Leo confirmed it for ever and aye. Total of the days, 2,543.

III.

Here is made known by this writing that I, Living, at my exit from Crediton minister to the church of Exeter, feeling at my departure compassion for my dear brethren, confirmed the indulgence which Egger (Æthelgar), the bishop dear to my people, bestowed upon Crediton minster, and also (the

indulgences) which were given by other bishops since, (and) of my day, and which were promised by other bishops; also which I have gathered out of many books, and have brought together done (copied) into another mass book at St. Mary's altar, where it may be seen. And in another book that is called "Penitential—Commandments Fulfilled." And I confirmed it with one hundred days without end. And I invoke curses on those who shall otherwise appoint, and also on all the Church's foes.

Total of the whole indulgence, forty-one years, two hundred and sixteen days.

IV.

In the name of our Lord Jesus Christ.

I, Eadnoð, bishop, make known by this writing that I borrowed thirty marks of gold, of public weight, for the management of my land, from Beorhtnoð; and I delivered to him one yard of land by the Creedy in pledge, on the understanding that he should have it for his day, (and) after his day bequeath it to whomsoever might be dearest to him of those who are in the land. These are the boundaries of the land—of the yard (of land) by the Creedy. First at Schokebrook ford; then east along the road to the little gore; eastward south to the still lake on the Creedy; up against the stream to the solitary oak; thence east to the high road that (leads) back to Schokebrook ford. There are to witness: Cnut, king; Wolfstan, archbishop; Living, archbishop; Brihtwold, bishop; Eadnoð, bishop; Burhwold, bishop; Æðelwine, bishop; Brihtwine, bishop; Æðelweard, ealdorman; and Æðelwold, abbot; and the household (monastery) at Exeter; and the household (monastery) at Crediton. And of this the bishop sent notice to the city of Exeter and to Totnes, and to Lidford and to Barnstaple. Peace be to those who maintain this, and hell be to those who break it. And of this writing there is a copy at Crediton amongst their old charters.

V.

To all the sons of holy mother Church who shall see or shall hear read the present page, I, William Brewer, by the divine mercy Bishop of Exeter, desire eternal salvation in the Lord. Be it known to our universal community that we, by the instigation of divine charity, have confirmed the above written indulgences, obtained by the diligence of our pre-

decessors, bishops of Crediton and Exeter, at various times, for the Church of the Holy Cross, and of the Mother of Him who was crucified, the ever-Virgin Mary of Crediton, for the pious and perpetual consolation of the faithful, which we have seen with our eyes, and have caused to be read in our hearing—in the same manner as, from the ancient instruments of the said church, we have certainly ascertained they were graciously confirmed by the highest prelates, desiring in all things to preserve undiminished the acts of our predecessors, and acting upon the perpetual authority reposed in us by the Lord—(that is to say) as well the said indulgences, as also the penalty which our aforesaid predecessors have with forethought imposed on the disturbers and violators of the same. We, therefore, through the mercy of the eternal God, and relying on the merits of all saints, desiring to add privilege to privilege, for all the benefactors of the said church, and for all who at any time shall visit it for the sake of pious devotion, from the penance which is laid upon them, mercifully deduct forty days. And, in order that this may not at any future time be rendered uncertain, we have caused the present page, according to the custom of the modern day, to be confirmed by the impression of our seal. Given at Crediton in the year of grace 1236, the kalends of January, that is to say, the feast of the holy apostle Thomas (21 December, 1235).

Such being, as far as can be ascertained, the purport of these documents, we are enabled by the light of the last of them to perceive the nature of the series—that is to say of the first three—the fourth, which relates to the plot of ground on the bank of the Creedy, being foreign to the rest. Taking the first three and the fifth together, we find that the last is a copy of a deed of confirmation, executed at Crediton, by William Brewer, bishop of Exeter, on the 21st of December, 1235, and sealed with his seal, whereby he confirms to the church of Crediton certain indulgences therein above-written, which, as the instrument is careful to state, the bishop saw with his own eyes and heard read.³

These “above written” indulgences referred to in the

³ We are here reminded of a similar expression which occurs in a dedication deed by the same Bishop Brewer, of the church of St. Burian, in Cornwall, in 1238, recorded in Bishop Grandisson's *Register*, ii. fol., 26 b., and printed in Oliver's *Monasticon*, p. 8. The deed recites a foundation charter of St. Burian's by King Æthelstan, of the date 943; and the bishop is represented as saying that he had seen this actual charter in the church of St. Burian—“Sicut in ecclesiâ ipsâ scripta (sic) vidimus.”

bishop's confirmation deed are the first three of our series, the dates of which we now propose to ascertain.

The first purports to be a declaration in person by Æðelgar, the second bishop of Crediton. King Æðelstan is spoken of as living; hence the date must be prior to the 27th of October, 940. Moreover, a pope Leo is referred to. During Æðelstan's reign there were two popes Leo—Leo VI., who succeeded in 928, and died seven months afterwards, and Leo VII., who succeeded in 937, and died in 939. The narrative speaks of an interview with a pope Leo, followed by another interview, considerably more than half a year afterwards, with a pope of the same name, and to all appearance the same person. It follows almost necessarily that the pope referred to is Leo VII. The date of the document is thus brought to either A.D. 938 or 939.

The second document mentions Bishop Living, and hence must be subsequent to 1027. It also mentions "another Pope Leo," with evident reference to the first document. The pope who came next after 1027 was Leo IX., who was elected in 1049; *i.e.* three years after Living's death. The date of the second document, which is a narrative in the third person, is thus brought down to after A.D. 1049.

The third document purports to be a declaration by Bishop Living himself, and hence must be of a date between 1027 and 1046.

The first question which arises is this: Irrespective of the subject-matter of these declarations, inasmuch as, if genuine, they must be renderings of real compositions of the dates ascertained, is it possible to believe that there ever existed Anglo-Saxon originals, which by repeated copying, or by having been written from dictation, could have become distorted into the singular forms which appear here? This is a question upon which only experts are qualified to speak. Some have suggested that the peculiarities of this composition are due to a Devonshire dialect of Anglo-Saxon, or to the west-country mode of pronouncing the Old English tongue. Again, it has been noticed, and must be admitted, that some of the expressions which seem the strangest are not the most unaccountable. Nothing is at first sight more monstrous than the phrase, "To than holiapopa leon." Yet this is not very far off in sound from the words, "Tó thám hálgan Papa Leo." Worse distortions of spelling than this occur in the names in *Domesday*. "Adþelstan synge" again may have been written from the dictation of some one who, seeing "cyng" in the charter, read it with a soft c, as we pronounce "cincture."

Still, when every allowance has been made, the verdict is on the whole unfavourable. Professor Earle, though desiring not to speak confidently on a matter of such obscurity, thinks it impossible there ever could have been genuine originals of which these sentences can have become perversions. This judgment however does not extend to the fourth—the land charter—which, in Mr. Earle's opinion, does show traces of having been derived from a genuine source.

If these views should be borne out upon further examination, it must follow that the documents in question are fictitious.

I. Let us for a moment, however, assume the first of them to be genuine, and examine the story it purports to tell. Bishop Ælsgar represents himself as having left St. Mary's Minster, Crediton, "for his pride," going to Rome, there falling sick for seven years and more, when he sees a vision of the Blessed Virgin, who bids him go to Pope Leo. The Pope commands him to remain another half year at Rome, and obtain indulgences for his people and church. This he does, and then returns to Crediton, where he consecrates the church enclosure. Then he goes back again to Rome, and obtains Pope Leo's confirmation of the indulgences; and also, it would seem, absolution for himself. The narrative thus covers a period of eight or nine years prior to the papal confirmation, which must have been, as we have seen, A.D. 938 or 939.

Now Ælsgar was appointed Bishop of Crediton in 934. The name of Eadulf, the former bishop, appears for the last time in a charter dated the 28th of May, 934.⁴

The first signature of Ælsgar, as bishop, occurs in a charter of the 16th of December, 934.⁵ His consecration then, or at least his appointment, must have taken place between the 28th of May and the 16th of December, 934. But at this date, according to the narrative before us, he was at Rome. Not only, according to the narrative, was he absent from this country when he was made bishop, but he was absent at a date when he is represented as having been one of the witnesses to this grant of land by King Ælstan at Frome, on the 16th of December, 934.⁶ Moreover it is quite obvious that when, according to the narrative,

⁴ K. C. D. CCCLXIV (ii. 194). The subsequent signature in * CCCLXX (ii. 206) cannot be relied upon in point of date.

⁵ K. C. D. MCX (v. 215).

⁶ No one of the Ælstan charters has better marks of genuineness than this.

Ælþelgar left St. Mary's Minster "for his pride," it was not as bishop that he left, for at that time his predecessor, Eadulf, was living. Neither was he bishop at the time when he is represented as saying that the Pope told him to obtain indulgences "for my people and my church." These circumstances, though not perhaps fatal, are not favourable to the genuineness of the narrative.⁷

The apparently insuperable objection remains, that at the date ascertained, namely, the first half of the tenth century, the practice of granting indulgences for long periods of years had not come into vogue. This criticism, first suggested to the writer by Mr. F. H. Dickinson, is borne out by the evidence of historians. Turning to Migne, we find in the twenty-seventh volume of the *Nouvelle Encyclopédie Théologique*, an introductory sketch of the origin and growth of the doctrine and practice of the Church as to grants of indulgences. From a statement in this introduction,⁸ it is evident that the first instance of such a grant known to the writer occurs in the year 1006, when an indulgence for one year only for "a third part of the greater sins for which the penance was imposed" was granted to a penitent who came and assisted in the work of the church—it is presumed in building and repairing. The writer observes, however, that we must suppose partial indulgences to have been in use before the eleventh century, inasmuch as an archbishop of

⁷ It may be asked why, when the indulgences were obtained, Ælþelgar did not obtain the Pope's confirmation at once; and why, instead of that, he first came to England, and consecrated the enclosure, and then went back to Rome for the confirmation. The answer might be, that he needed the Pope's confirmation for his own grant at the gate, and the four corners of the enclosure; and, moreover, he had his own shrift to obtain.

⁸ Le premier document authentique que j'ai pu trouver jusqu'ici, c'est une indulgence partielle accordée par Pontius, archevêque d'Arles, à la dédicace de la basilique du monastère de Mont-Majour en 1006, c'est-à-dire, au commencement du xi^e siècle. Rambert, abbé de ce monastère, ayant fait rétablir cette basilique, pensa, dit Mabillon, à l'enrichir du trésor céleste des indulgences: Cœlesti indulgentiarum thesauro. . . . Ce qu'il y a de certain, c'est que l'archevêque Pontius condescendit aux instances de Rambert, et accorda l'indulgence en différentes manières aux différents pénitents. . . . If a penitent condemned to the severest penance should come to the church on the dedication-day, or once in the course of a year, "et adiutorium dederit ad opera ecclesie," he would be absolved, "ex parte Domini nostri Jesu Christi, et ex nostrâ" (i.e. on part of the archbishop) from the third part of the greater sins for which the penance had been imposed (unde poenitentiam habet susceptam) until the same day of the following year. As to one who had been subjected to a lesser penance, "If three days in the week have been prohibited (vetati) by way of penance, we remit him one," &c. And those who have confessed sins of the lightest kind, and have had penance imposed for them, "we absolve from half their penance to the end of a year." Page 116.

Arles would not have introduced a practice of this kind on his own responsibility; and if he had done so, other prelates would have opposed it as a dangerous novelty.

Further, from the expressions "we absolve," and "those who have confessed," the writer shows that the penance referred to is a sacramental penance; that is to say, a temporal penance due for sins within the spiritual jurisdiction of the church, *in foro conscientie*—not a temporal punishment inflicted by an ecclesiastical court of temporal jurisdiction, such as fine or imprisonment. He proceeds to cite other similar instances of remission of temporal penances for sin in 1029, 1060, and 1070; and then in 1092 there appears a remarkable indulgence granted by Pope Urban II. to the monastery of Cava, in the principality of Citra, near Salerno, about twenty-five miles south-east of Naples. "Who-soever," says this indulgence, "being through the divine aid in a state of penitence, shall visit this holy church on the day before the day of consecration, and on the day itself—that is to say, on the 4th and 5th September—and moreover on the holy days of the Lord's Supper and the Passion of our Lord, shall merit the same indulgence as he would have merited if he had performed a journey to, and returned from, the shrine of St. Jago of Compostella," which was in Galicia, in the north-west extremity of Spain. "On other days of the year, any one visiting the church for devotional purposes is to be entitled to an indulgence of four years and as many periods of forty days." Then, at a council in 1095, the same Pope Urban is found for the first time granting a plenary indulgence to all who assumed the badge of the cross in token of their devotion to the recovery of the Holy Land from the infidel—in short, to all who should become crusaders. This was again a remission of penance for sins committed *in foro conscientie*.

The following instance, quoted from Mabillon, approaches as nearly in its circumstances to our presumed Crediton indulgences as any other. The historian relates that Geoffry, a native of Orleans, who was made Abbot of Croyland by King Henry I. in 1109, having found on his induction his abbey half consumed by fire, like a brand plucked from the burning, and not yet restored to its becoming dignity, undertook the enterprise of building a new church, and of reconstructing the whole monastery in stone, in place of brick or clay, and, if his means should permit, with a foundation of marble. Inasmuch, however, as the resources of his monastery were not adequate to such an outlay, he besought

from the bishops of England an indulgence for all those who should contribute money to this great undertaking of one-third part of their penances; and by his messengers he caused this indulgence to be proclaimed throughout not only England, but Scotland and Ireland, and even through Flanders and France, sending to those countries monks bearing relics of saints, and circular letters admonishing the faithful to supply means for the undertaking. This, says the historian, he so successfully accomplished, that his collectors not only brought him in a large sum of money, but even induced many to adopt the monastic life.⁹

It would be needless and beyond our scope to follow the history further, down to the famous protest of Luther, in 1517, against the preaching of John Tetzels, and the open and scandalous sale of indulgences by him.

In a subsequent page of the introduction in Migne is discussed the question of indulgences for such long periods as ten, fifteen, and twenty thousand years, and many opinions are cited to the effect that these so-called grants were spurious, and inventions for the purposes of licentious indulgence, not justly attributable to the Holy See. Other casuists have argued that if a plenary indulgence could be granted by the Pope, an indemnity for any term of years however large must be within his power, as being less than infinity. But with these speculations we are not concerned, inasmuch as the utmost length of the Crediton indulgences is such as might easily be compassed by the life of a living person.

The result of the whole seems to be, that, the earliest known instance of an authentic grant of indulgences being as late as in 1006, a declaration of a grant of indulgences sanctioned by the Pope in 938 or 939, sixty-six years before, must necessarily be a fabrication. The second and third documents being as late as 1049 and 1046, are not open to the objection of anachronism; but nevertheless they are so worded, and come in such a dubious shape, that they must be received with the greatest caution, if not with absolute incredulity. The strong probability is, that all three compositions are due to the perverted zeal of some monks of Crediton, anxious to invest their house with privileges which might add to the renown and profit of the minster, and indifferent to the goodness or badness of its title to such distinctions.

⁹ Mabillon, *Annales Benedict.*, lib. lxxi. No. 87, vol. vi. p. 538.

A suggestion has been thrown out that this assumption of special privileges by the church of Crediton might have been tolerated by ecclesiastical authority, as a compensation for the loss of the see. Another observation, due to Mr. Earle, is this. The declaration of Bishop Æðelgar purports to be addressed to "all my successors at Crediton Minster." This injunction laid upon posterity shows a degree of forethought inconsistent with the simple ideas of the tenth century, and betrays the hand of the too ingenious inventor of the thirteenth. Perhaps the reference in the fifth document, put into the mouth of Bishop Brewer, to the "forethought" of his predecessors, has reference to this opening phrase.

II. The second document contains a list of donations of days of indulgence by nine bishops who are named. Of the first six—Hondret, Porte, Leuegar, Eadberht, Eansberht, and Ealnod—none were bishops of English sees at the date of the document, unless Bishop Leofgar, of Lichfield, whose name occurs once in 1020, were one. Of Algars and Eadulfs we have some examples in the list of English bishops of the time, and the list is closed by the name of Living. The fact of the donors being foreign bishops would not stand in the way. The practice seems rather to have been for a priest who wanted indulgences for his church, to go to a foreign country for them. Unfortunately the names, though not those of English bishops of the period, have a very English sound, and the list reads like a random compilation, with the names of Eadulf and Living, the first and last bishops of Crediton, thrown in at the end to give an air of probability to the whole.

III. In the third document the statement that Bishop Living on a certain occasion took, as it would seem, his final departure from Crediton for Exeter, to the grief of his brethren of the former community, would deserve serious attention were not the source of this piece of information as much open to suspicion as the rest. There is no trace of such a migration in the well-known history of Living; and we must conclude that the fabricator of the document in this instance was unacquainted with facts which have been preserved to us, and are well established. The see was not transferred till after Living's death.

What then remains? Certainly this, and perhaps not more than this, that here we have a striking instance of the systems that were practised, and, it may be, of the religious

frauds which were permitted and sanctioned, in the thirteenth century. Taking this as a point of departure, we may well congratulate ourselves on the theological and ecclesiastical changes which have taken place since such an imposture as this is supposed to have been was possible.

Incidentally there are several minor points of interest. Originally, as appears from King Æthelstan's charter to Crediton,¹ the dedication saint of the church was St. Mary. Afterwards, as appears from Dr. Oliver,² the church was dedicated to the Holy Cross. Here, as Mr. Levien has pointed out, we find the double dedication in one and the same instrument.

The geographical ideas also are worthy of notice. Mons Jovis appears to have been a name for the Cottian Alps, from the Great St. Bernard southwards, at some part of which Hannibal was believed to have crossed. In King Alfred's version of Orosius we find the following: "Afterwards he (Hannibal) went over many nations, till he came to the mountains [named] the Alps, and these also rushed over, though he was often withstood in battle, and made the way over Mount Jove."³ In the original of Orosius there is no mention of Mount Jove, or of any other mountain crossed by Hannibal. The explanatory interpolation is thus due solely to Alfred himself. "The way" evidently means the road over the pass either of the St. Bernard or of Cénis.⁴ Thus the bishops west of Mount Jove would be bishops in the south of France.

"Wale-lond," though a common phrase for any foreign country, is here, no doubt, Wälsch land, or Italy; and the bishops on this side the mountains in Wale-lond, mean "Transalpine" bishops.

"Bruthude" has been rendered Brittany, but Mr. Richard John King, with great probability, suggests "Bruttia," or "the Abruzzi," standing for South Italy generally.

¹ MS. Cott. Aug. II. 31; printed K.C.D., CCCLXII. (ii. 191.)

² *Monasticon*, p. 447.

³ From Dr. Bosworth's translation. The original clause is this: "And þone wég geworhte ofer [munt Jof]," the words "munt Jof" being in brackets, showing that they exist in the Lauderdale manuscript only, and not in the Cotton manuscript of Alfred's Orosius.

⁴ Æthelweard, in relating the fact that King Æthelstan sent two of his daughters to Otto, afterwards King of the Germans, that he might take his choice, adds that the one whom Otto did not choose (who was named Ælfgifu) was married to a certain king "juxta Jupiteos montes." This king is stated by the editors of the *M. H. B.* to have been Lewis the Blind, "Emperor and King of Arles," p. 499. Lappenberg (Thorpe's Ed. II. 110) explains "juxta Jupiteos montes" as descriptive of a prince "possessing a territory near the Alps."

The mention of "Ireland" as a name for the sister island in the tenth century has been thought very suspicious; and it has been questioned whether there ever was a period when there were as many as four archbishops' provinces at one time in Ireland.

In the paper above referred to Mr. Levien found some difficulty with the arithmetic, as to the number of days; but if we read "nunhenne" of the manuscript as signifying not "nineteen," but "nine," there will be found very little error. The table stands thus:

	Days.
Seventeen archbishops	2000
Other bishops E. of Rome and W. of Mons Jovis	4007
Other archbishops and bishops on this side of the mountains in Wale-lond	3007
Three archbishops in Bruthude and their suffragans	1060
Four archbishops of Ireland and their suffragans	910
Bp. Æðelgar himself for the gate	100
The same for the four corners	400
The Pope	1000
	12,484

Amongst the greatest obscurities is the passage in the third document which seems to name a certain book, "Penitentialis—Bodde to-hourde," literally, "Penitential; Commandments obeyed," seeming to suggest the existence of a book of account, in which were entered the various penances to which penitents had become liable under the rules of some penitential before they could obtain shrift, with a list of such penances as had been fulfilled.

IV. As to the fourth document, we are on safe ground, and feel with confidence that we are dealing with a genuine instrument. The date is not given, but may be gathered from the names of the signatories. These are—King Cnut; Wolstan, Archbishop of York; Living, Archbishop of Canterbury; Britgloth, or Brihtwold, Bishop of Ramsbury; Yednod, or Eadnoth, of Crediton; Burthloth, or Burhwold, of Cornwall; Athelwine, of Wells; and Bristyne, or Brihtwine, of Sherborne; the ealdorman Æthelweard, and an abbot named Æthelwold. Without going into minutiae of dates, inasmuch as the names of these personages are all to be found, with others, as witnesses to a grant by King Cnut to the church of St. Germans, preserved at Exeter, and printed by Kemble

from a copy in the Lansdowne MSS.,⁵ we may safely assume the date of this to be the same as of that, viz., 1018.

The identification of the land is equally clear. The following are the boundaries :

First at Schokebrook's ford ;
Then, east along the road to the little gore ;
Eastward south to the still lake on the Creedy ;
Up against the stream to the solitary oak ;
Then east on the highroad back to Schokebrook's ford.

This Schokebrook is the little stream which comes down from the village of Shobrook, to which it lends its name, and flows into the river Creedy ; and the ford is the place where the present road crosses the stream.⁶ The little gore, the "dead" or "still" lake in the river, and the place even where once stood the "solitary oak" (a very common object in these boundaries), may be ascertained by reference to the accompanying plan, taken from the ordnance map. The land is found to be a farm of about three hundred acres, in the parish of Newton St. Cyres, now known as Lower Creedy. The northern, western, and part of the southern boundaries of the estate are those of the parish also ; that is to say, Lower Creedy Farm, though in Newton St. Cyres, projects into the parish of Crediton towards the east and north.⁷

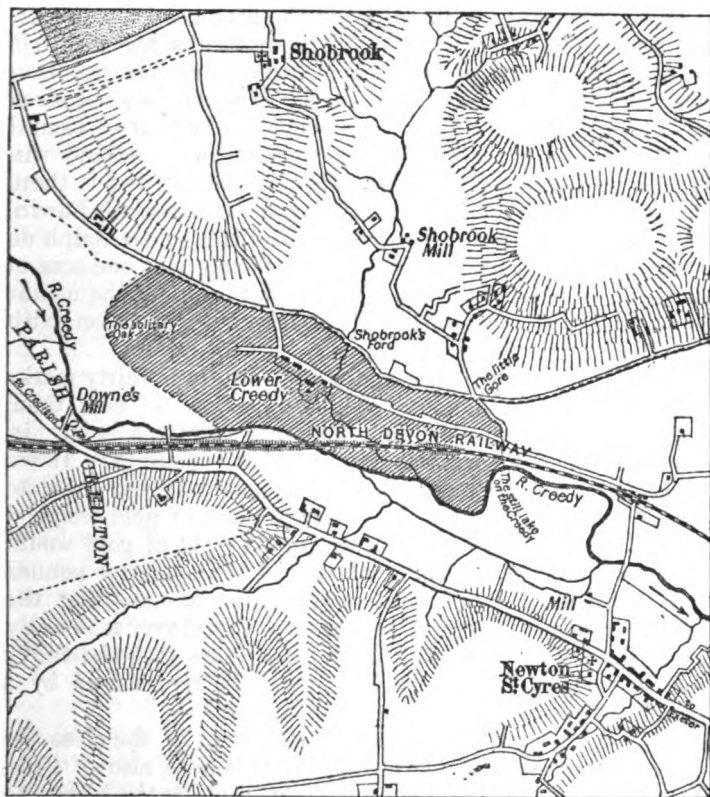
The principal manor of Newton St. Cyres, as we learn from *Domesday*, p. 101 (4), belonged at the time of the survey to St. Peter's, Exeter ; and we are further told that it appeared from certain charters which were produced to the survey commissioners by Bishop Osbern, that the manor had be-

⁵ K.C.D. DCCXXVIII. (iv. 2).

⁶ The derivation of this word Schokebrook is peculiar. No doubt it comes from "Sceocca," the old pagan Saxon name for the devil. "Sceocca-broc," the devil's brook, occurs in the boundaries of the Monkerton charter, presented to the British Museum by Sir W. C. Trevelyan, of which photolithographs may be obtained. There it is a name for the brook that flows past Great Wonford, near Exeter. Why this sinister appellation was given to these small streams is not very evident. Often they seem to be sluggish and muddy waters ; but more probably the rivulets so called were such as from being used as house drains were unfit for drinking or washing purposes. The more usual name for the Evil One in Anglo-Saxon is *deofol*. Is "deofol" one of that class of words which, being derived from the Latin, or from the Greek through the Latin, came in only with Christianity, like "angel," "priest," and a number of ecclesiastical terms ? The question is not without bearing on the subject of nomenclature. On the one hand it seems highly probable that *Doflisc* (the modern Dawlish) and *Dewlish*, in Dorset, are derived from *deofol* ; and yet these places must have been named, one would suppose, before the introduction of Christianity.

⁷ The line of the North Devon Railway crosses this piece of land just beyond Newton St. Cyres Station.

longed to St. Peter's, Exeter, ever since the accession of King Edward—that is, before 1041, and consequently before the removal of the see from Crediton to Exeter. In other words, Newton St. Cyres was not transferred with the see from



Crediton to Exeter; it belonged to St. Peter's before. The principal manor of Newton St. Cyres may never have belonged to Crediton at all.

On the other hand, it appears that this small manor of Lower Creedy did belong, before the year 1018, to Crediton, and that it was alienated from it in that year by the transaction of which the deed before us is the record.

This transaction is not in all respects clear. Bishop Eadnoð seems to have borrowed from one Beorhtnoð thirty marks of gold for the purpose of improving the property of the see.

Then he delivers to the lender this manor "as a pledge," at the same time with the understanding that he (the lender) was to hold it for life, and then bequeath it to whomsoever he might think fit. The meaning perhaps is that the land was to be redeemable on repayment of the money, but that if the debt should not be repaid in the lifetime of the lender, the land was to be forfeited. The opportunity was still left to Beorhtnoð of restoring the land to the church of Crediton after his death, if he should think fit. This he does not seem to have done; for there is no reasonable doubt that this small manor of Lower Creedy is the "one ferling" of land "in Credie" which appears in *Domesday*, p. 114 (3), and is there stated to have been held in 1066 by a Saxon named Edwin, and after the Conquest by a certain William, under Ralph de Pomeroy, having land for one plough, having also one acre of meadow, and stated to be worth two shillings. If the manor had gone back to Crediton, it would have gone over with Crediton to the see of Exeter.

The sum for which this land was pledged was thirty marks of gold, of léod, or standard, weight. The "mark" here, then, is a measure of weight, and does not signify a coin. In money, a Saxon mark was equal to thirty penings.⁸ If we are at liberty to assume that, in weight, a mark was equal to thirty pennyweights, it follows that a mark of gold weighed one and a half ounces. Thirty marks' weight of gold would thus be forty-five ounces, or three and three-quarter pounds weight of gold. And if we may further assume that the ratio of weight to value of gold has not varied very materially since the date we are considering, it follows that the thirty marks borrowed by the bishop would be represented by a sum of about £275 in modern reckoning.

It is interesting to note in the statement at the close the germ of a system of registration of title, and also of title-deeds. Notice of this transaction was sent by the bishop to the four principal towns of Devon—Exeter, Totnes, Lidford, and Barnstaple; and, whilst the document itself was no doubt given over to the lender of the money, a copy⁹ of it was preserved at Crediton amongst their old charters.

⁸ Thorpe's *Laws of England*, 8vo ed. vol. ii. Glossary, Art. "Money."

⁹ Such is supposed to be the meaning of the faulty word "idoua."

NOTES ON SLIPS CONNECTED WITH DEVONSHIRE.

BY W. PENGELLY, F.R.S., F.G.S., ETC.

PART II.

(Read at Paignton, August, 1878.)

DURING the year which has slipped away since we met last, I have prepared a second instalment of *Notes on Slips connected with Devonshire*, which I now beg to offer to the Association.

I. BARING-GOULD, MR. S.

1. SIR WALTER RALEIGH:—In *Curious Myths of the Middle Ages*, by S. Baring-Gould, M.A. (New Ed., 1877), the Fifth paper or essay is devoted to the story of *William Tell*, and the author, having an early opportunity of saying to his readers "We shall in the following pages demolish the very story," makes, by way of illustration, the statements given below:—

"Sir Walter Raleigh, in his prison, was composing the second volume of his history of the world. Leaning on the sill of his window, he meditated on the duties of the historian to mankind, when suddenly his attention was attracted by a disturbance in the court-yard before his cell. He saw one man strike another whom he supposed by his dress to be an officer; the latter at once drew his sword and ran the former through the body. The wounded man felled his adversary with a stick, and then sank upon the pavement. At this juncture the guard came up and carried off the officer insensible, and then the corpse of the man who had been run through.

"Next day Raleigh was visited by an intimate friend, to whom he related the circumstances of the quarrel and its issue. To his astonishment, his friend unhesitatingly declared that the prisoner had mistaken the whole series of incidents which had passed before his eyes.

"The supposed officer was not an officer at all, but the servant

of a foreign ambassador; it was he who had dealt the first blow; he had not drawn his sword, but the other had snatched it from his side, and had run *him* through the body before anyone could interfere; whereupon a stranger from among the crowd knocked the murderer down with his stick, and some of the foreigners belonging to the ambassador's retinue carried off the corpse. The friend of Raleigh added that government had ordered the arrest and immediate trial of the murderer, as the man assassinated was one of the principal servants of the Spanish ambassador.

"'Excuse me,' said Raleigh, 'but I cannot have been deceived as you suppose, for I was eye-witness to the events which took place under my own window, and the man fell there on that spot where you see a paving-stone standing up above the rest.'

"'My dear Raleigh,' replied his friend, 'I was sitting on that stone when the fray took place, and I received this slight scratch on my cheek in snatching the sword from the murderer, and upon my word of honour, you have been deceived upon every particular.'

"Sir Walter, when alone, took up the second volume of his history, which was in MS., and contemplating it, thought—'If I cannot believe my own eyes, how can I be assured of the truth of a tithe of the events which happened ages before I was born?' and he flung the MS. into the fire."

"This anecdote," says Mr. Baring-Gould, in a foot-note, "is taken from the *Journal de Paris*, May, 1787; which derived it from 'Letters on Literature, by Robert Heron' (i.e. John Pinkerton, F.A.S.), 1785. But whence did Pinkerton obtain it?" pp. 114-6.

Probably every one reading the passage just quoted would ask at least two questions:—

(A.) Is there not more than one version of the anecdote respecting the fray Sir Walter witnessed?

(B.) Has not the burning of the manuscript, supposing it to have really taken place, been ascribed to a very different cause?

(A.) The following extracts from *Notes and Queries* will furnish a reply to the first question:—

"Mr. JOHN ALDIS, jun., says of it: "The story I have often met with, differing much, however, in details. Carlyle, in the following passage, clearly refers to a different version from that of the *Journal de Paris*:—

“ ‘The old story of Sir Walter Raleigh as looking from his prison window on some street tumult, which afterwards three witnesses reported in three different ways, himself differing from them all, is still a true lesson for us.’ ‘On History,’ *Essays*, vol. ii. p. 171.”—*N. and Q.*, 3rd S. xi. 56.

MR. WILLIAM BATES, writing to the same journal, gives, as follows, the story as it stands, he says, in Pinkerton's *Letters of Literature*, from which it was derived by the *Journal de Paris*, according to Mr. Baring-Gould; who, it may be as well to remark, says *Letters on Literature*:—

“Sir Walter Raleigh, when confined in the Tower, had prepared the second volume of his immortal history for the press. He was standing at the window of his apartment, ruminating on the office of an historian, and on the sacred regard which he ought to pay to truth, when of a sudden his attention was excited by an uproar in the court into which his prospect was directed. He saw one man strike another, whom by his dress he judged an officer, and who, drawing his sword, run the assailant through the body; who did not, however, fall till he had knocked down the officer with his fist. The officer was instantly seized, while lying senseless, and carried away by the servants of justice; while at the same time the body of the man he had murdered was borne off by some persons, apparently his friends, who with great difficulty pierced through the vast crowd that was now gathered round.

“Next day an acquaintance of Sir Walter called upon him, a man of whose severe probity and honour Sir Walter was convinced from innumerable proofs, and rated his friendship accordingly. Raleigh, after their first compliments, told the story of yesterday's fray; which had impressed him deeply, as being a spectator of the whole affair. What was his surprise when his friend told him that he was perfectly mistaken in the whole story! that his officer was no officer, but a servant of a foreign ambassador; that this apparent officer gave the first blow; that he did not draw his sword, but the other drew it, and it was wrested out of his hands, but not till after he had run its owner through the body with it; that after this a foreigner in the mob knocked the murderer down, in order that he should not escape; that some foreigners had carried off the servant's body; and that orders had arrived from court for the murderer to be tried instantly, and no favour shown, as the person murdered was one of the principal attendants of the Spanish ambassador.

'Sir,' says Raleigh, 'allow me to say that, though I may be mistaken as to the officership of the murderer, yet I know of a certainty that all my other circumstances are strictly true; because I was a spectator of the whole transaction, which passed in the very spot opposite where you see a stone of the pavement a little raised above the rest.' 'Sir Walter,' says the friend, 'upon that very stone did I stand during the whole affair, and received this little scratch in my cheek, in wresting the sword out of the fellow's hand; and as I shall answer to God, you are totally mistaken!' 'You grow warm, my friend, let us talk of other matters,' said Sir Walter; and after some other conversation, his friend departed.

"Raleigh took up the manuscript of the second volume of his history, then just completed: 'How many falsehoods are here!' said he. 'If I cannot judge of the truth of an event that passes under my eyes, how shall I truly narrate those which have passed thousands of years before my birth, or even those that have happened since my existence? Truth, I sacrifice to thee!' The fire was already feeding on his invaluable work, the labour of years; and he calmly sat till it was utterly consumed, and the sable ghost of the last leaf flitted up the chimney." 3rd S. xi. 201-2.

As both Mr. Baring-Gould and Mr. Bates derived the anecdote from *Pinkerton's Letters on Literature*—the former, however, through the *Journal de Paris*, but Mr. Bates directly—it might have been expected that the two transcripts would have been essentially identical. This, however, is very far from being the case; and so far as the merely *literary* differences are concerned, they are no more than were to be expected, seeing that the narrative had to be translated from the English of Pinkerton into French for the *Journal de Paris*, and then translated back again into English in the case of Mr. Baring-Gould. The *facts*, however, might have been expected to be a little more in harmony in the two versions. Sir Walter Raleigh, speaking through Mr. Baring-Gould, makes the wounded man fell his adversary with a *stick*; but through Mr. Bates, to knock him down with his *fist*. The visitor told Sir Walter, according to Mr. Baring-Gould, that he was *sitting* on the paving stone; but Mr. Bates makes him say he was *standing* on it. Mr. Baring-Gould is silent about any display of temper on the part of either of the friends; whilst, according to Mr. Bates, Sir Walter found it needful to say, "You grow warm, my friend; let us talk of other matters."

B. With regard to the second question, RECNAQ, writing to *Notes and Queries*, asks: "What is the story of Raleigh's burning the second volume of his history?" 1st S. vii. 287.

To the query the following reply is appended by the editor:—

"The story is this:—A few days previously to his death, Raleigh sent for Walter Burre, who printed his History; and asking him how the work had sold, received for answer, 'So slowly that it had undone him.' Upon which Sir Walter brought from his desk a continuation of the work, to his own time, and, throwing it into the fire, said to Burre, 'The second volume shall undo no more; this ungrateful world is unworthy of it.' (Winstanley's *English Worthies*, p. 256). There is, however, no satisfactory authority for the truth of this anecdote; and it has been rejected by Arthur Cayley, and his other biographers."—*Ibid.*

II. FORTESCUE, Sir E.

1. ACCOUNTS:—A paper entitled *Sir Edmund Fortescue and the Siege of Fort Charles*. By Paul Q. Karkeek, printed in the *Trans. Devon. Assoc.*, vol. ix. pp. 336–350, contains a document headed "Payments and Disbursements on Fort Charles . . ." in which there are the following remarkable arithmetical slips:—

	£	s.	d.		£	s.	d.
"48 bushels of pease at 7d. per bushel	16	15	0"	instead of	1	8	0
"6000 of dried whittings at 8d. per cent	24	0	0"	"	2	0	0
"1200 weight of butter at 5s. per hundred	30	0	0"	"	3	0	0

Again, in adding up the various items, of which the foregoing are three, the total is made to amount to £740 1s. 6d., whereas, as the figures stand, it should be £848 11s. 6d., or if corrected for the errors just pointed out, £784 4s. 6d.

The foregoing account is followed by the following supplementary one, in which it will be seen there are two Slips:—

	£	s.	d.		£	s.	d.
"forty halberds at 6s. 8d. each halberd	15	6	8"	instead of	13	6	8
"86 great baskettes...at 5s. 6d. each baskettes	23	2	0"	"	23	13	0
"46 less baskettes...at 10d. each basket	1	18	4"	=	1	18	4

"This summe is . . . 38 7 0" instead of 38 18 0

It will be seen that the accountant is not only wrong in two of his items, but also in the sum of the three, which as his figures stand should be £40 7s. 0d. instead of £38 7s. 0d., or when corrected for the two errors pointed out, £38 18s. 0d.

Finally, the accountant makes the sum of £1355 18s. 9d. + £1031 19s. 9d. + £740 1s. 6d. + £32 17s. 6d. = £3157 17s. 6d., whereas it really is £3160 17s. 6d.; and by adding £38 7s. 0d. to £3157 17s. 6d. he gets £3196 14s. 6d., whilst in the present day no more than £3196 4s. 6d. would be obtained.

It is obvious that Sir Edmund was, or employed, a bad accountant, or that grave errors have been made in copying. There are *Slips* somewhere.

III. HARPER'S NEW MONTHLY MAGAZINE.

1. SIR FRANCIS DRAKE:—*Harper's New Monthly Magazine*, for December, 1868, vol. xxxviii., No. 223, contains an unsigned article entitled *South-coast Saunterings in England* (pp. 24-41), in which there are a few Slips respecting Sir Francis Drake, as the following passages will show:—

"When Drake returned from the famous discovery of the Pacific, Queen Elizabeth, on knighting him, gave him, as a device on his coat of arms, the figure of a Moor, which meant simply a compliment to the then highly respectable business of negro slave-trading. . . .

"At Plymouth tradition points out the spot where his five ships weighed anchor on the 13th of December, 1577, for the famous voyage . . . and that at which, two years later, four of those ships laden with the gold of California, cast anchor again, and Drake stood on a deck where the Queen was proud to visit him, to partake a banquet, and knight him as he knelt there. . . . But few at Plymouth, however, knew or remembered, amidst those grand stories, one thing which Drake really did of importance—he devised a scheme, and at a heavy expense to himself carried it out, of supplying Plymouth with pure water by a leat running from Dartmoor."

It is obvious that the writer believes of Drake :

- (A.) That he discovered the Pacific.
- (B.) That Queen Elizabeth gave him, as a device on his coat of arms, the figure of a Moor.
- (C.) That his voyage of circumnavigation was accomplished in about two years.
- (D.) That he brought back four of the five ships he took with him.
- (E.) That the Queen knighted him at Plymouth.
- (F.) That few of the inhabitants of Plymouth know that he brought them water from Dartmoor.

(G.) That the water scheme was carried out at a heavy expense to himself.

There is but little if any doubt that in each of these points the author has *slipped* into an error; and the aim of the following considerations is to show that he has.

(A.) *Discovery of the Pacific*:—The Pacific was discovered, not by Drake, but by Vasco Nuñez de Balboa, the Spanish governor of Darien, who crossed the isthmus in 1513, and was the first European who saw it. (See *P. Cyclo.* vol. iii., p. 314; *Ency. Brit.* vol. xvii. p. 462, Eighth ed.; or Irving's *Companions of Columbus*, ch. ix.) Nor was Drake the first European commander who navigated the Pacific, as this honour had been secured by Fernando Magalhaens, a Portuguese, who entered it through the Strait which bears his name, on 27th November, 1520. (See *P. Cyclo.*, vol. xiv. p. 277; or *Ency. Brit.*, 8th ed. vol. xiii. p. 808.)

(B.) *The device given to Drake by Queen Elizabeth*:—The question of Drake's Coat of Arms has been much discussed, as is well known to every reader of *Notes and Queries*. The writer, however, has mixed up two famous Devonians, for the device which he says was given to Drake, was really given to his contemporary and relative—Sir John Hawkins of Plymouth. Prince, speaking of Hawkins, says: "In this expedition [1564] he was so successful against the Moors, the Clarentieux Hervey, that then was, in the year following, added for his crest of arms, a Demie Moor, in his proper colour, bound in a cord. . . . This seems to signify as if he had taken prisoner some royetlet, or chief person among the Moors. (*Worthies of Devon*, ed. 1810, p. 472. See also p. 476; or Lysons' *Devonshire*, 1822, p. cxlviii.)

There can be little doubt that, notwithstanding Prince's innocent hypothesis to the contrary, the crest was, as the author states, "a compliment to the then highly respectable business of negro slave-trading," for it is well known that in 1562 Hawkins obtained on the Guinea coast a cargo of slaves, whom he carried to the West Indies where he sold them; that he was similarly engaged in 1564—the year mentioned by Prince—and in 1567. (See *P. Cyclo.* xii., 68; or *Ency. Brit.* xi., 249.)

(C.) *Duration of the Voyage of Circumnavigation*:—There seems to be a general concurrence amongst writers that Drake left Plymouth finally on his famous voyage on 13th December,

1577 (See Froude's *Hist. of England*, vol. xi. p. 374), but there is a diversity of statement respecting the date of his return; Prince (*Worthies*, p. 322) and the *Penny Cyclopædia* (ix. 122) making it the 26th September; Mr. Froude (xi. 396), the beginning of October; and the *Encyclopædia Britannica* (vol. viii. p. 133) as well as the *Plimouth Memoirs* (*Trans. Plym. Inst.* vol. v. p. 524), the 3rd November, 1580. In any case, the voyage occupied upwards of 2·75 years, and, fractions omitted, must be termed three years, not two. In accordance with this are the lines which, with others, are under Drake's portrait in the Plymouth Guildhall (See Worth's *Hist. of Plym.*, p. 41):—

“Great Drake, whose shippe about the worlde's wide waste
In three years did a golden girdle cast.”

(D.) *Number of Ships he brought back*:—As the author states, Drake's squadron consisted of five ships—the largest, the *Pelican*, of 120, or, as some say, 100 tons, and the smallest, the *Christopher*, of but 15. Of these, one was fired and abandoned soon after leaving the Plate River; the smallest was left behind at Port St. Julian, in Patagonia; a third went down soon after entering the Pacific; and the *Elizabeth* of 80 tons, which also reached the Pacific, abandoned the voyage, and reached England in June, 1579. (See Froude, vol. xi. pp. 372–8). Of the five, therefore, one alone, the *Pelican*, circumnavigated the globe; and this was the only ship Drake brought back.

(E.) *Where was Drake knighted?*:—The impression left on the reader of the article under notice, is of necessity that the Queen went to Plymouth and knighted the brave navigator there; but according to Mr. Froude—and this is in harmony with all the other accounts I have seen—“The *Pelican* was brought round to the Thames, and drawn up on shore at Deptford to be preserved as a remembrance of the voyage. A banquet was held on board, at which Elizabeth was present, and the occasion was used to give Drake the honour of knighthood.” (xi. 402).

(F.) *The alleged ignorance of the people of Plymouth generally on the subject of the Water*:—The author must have been singularly unfortunate in the acquaintances he made at Plymouth, as well as in his studies of the town, to be able to say on leaving it that “few knew or remembered that Drake carried out a scheme of supplying Plymouth with

pure water by a leat from Dartmoor." A visit to the Guildhall would have shown him the following lines amongst those beneath the portrait already mentioned:—

"Who with fresh streams refresheth this Towne at first,
Though kist with waters, yet did pine with thirst;"

he might have learned from the Old Town Conduit, in Tavistock Road, that "Sr Francis Drake first brought the Water into Plymouth in 1591;" at least, any one who was, or had ever been, a member of the Corporation, could have told him all about the annual "Fishing Feast" in August, when the Mayor and Corporation inspect the leat, and at the Weir Head drink first, in water, "To the pious memory of Sir Francis Drake," and then, in wine, "May the descendants of him who brought us water never want wine." (See Worth's *Hist. of Plym.*, pp. 41, 309–11).

(G.) *At whose expense was the water scheme carried out?—* The following entries occur in the *Plimouth Memoir's Collected by James Yonge*. 1684:—

"1589–90 . . . In m^r Blythman's Mayoralty I finde the town agreed with s^r F. Drake, to bring in y^e watur and give him £200 in hand.

"1590–1. Dec^r 1590 S^r F. Drake began on the Rivulet, and brought It into the town (25 myles) 24 Aprile following, and before Michæalmas built 6 mills, 2 at *Wythy*, 4 at y^e town, also divers conduits." (See *Trans. Plym. Inst.*, vol. v. pp. 526–7.)

Mr. Worth says: "Drake was—and is even now by some—supposed to have brought the water into Plymouth at his own cost. . . . A Corporation entry, under date 1590, states: 'Agreed with Sir Francis Drake to bring the water into the town, and paid him £200.' Subsequently he is said to have been paid for his great care and diligence £352 16s. 8d. He also had a lease for sixty-seven years of the grist mills which he built—two at Widey and four in the town." (*Hist. of Plym.*, p. 309.)

It may be concluded then that Drake did *not* discover the Pacific; that Queen Elizabeth did *not* give him as a device on his coat of arms, the figure of a Moor; that his voyage of circumnavigation was *not* accomplished in two years; that he did *not* bring back four of the five ships he took with him; that the Queen did *not* knight him at Plymouth; that *more than a few* of the inhabitants of Plymouth know that

he brought them water from Dartmoor; and that the water scheme was *not* carried out at a heavy expense to himself.

IV. HUNT, Mr. R.

1. PLYMOUTH OR LISKEARD? The following occurs in *Popular Romances of the West of England; or, The Drolls, Traditions, and Superstitions of Old Cornwall. Collected and Edited by Robert Hunt, F.R.S. First and Second Series in One Volume.* (No date on title-page.)

"WEATHER AT LISKEARD.

"The south wind always brings wet weather;
The north wind wet and cold together.
The west wind always brings us rain;
The east wind blows it back again.
If the sun in red should set,
The next day surely will be wet;
If the sun should set in gray,
The next will be a rainy day."

Bond's *Looe*."

Mr. Hunt has made a Slip here, and has thereby robbed Devonshire and enriched Cornwall. The lines certainly occur in Mr. Bond's *History of Looe* (1823), p. 140; but they are introduced with the words "The Plymouth Calender states that there" (then follow the lines which Mr. Hunt has quoted verbatim). BALLIOLENSIS, however, claimed them for Plymouth as long ago as 1854 (See *Notes and Queries*, 1st S. ix., 585; or *Trans. Devon Assoc.* viii. 724.

The Devonshire Calendar and Register for 1876. London, Percy and Co., Paternoster Row, p. 5, applies the lines to Dartmoor exclusively.

V. KARKEEK, Mr. P. Q.

1. AMY ROBSART:—In "*Amy Robsart. A Lecture read before the Natural History Society, Torquay, on February 2nd, 1874, By Paul Q. Karkeek, Esq.*," pp. 39, the following passage occurs:—"Much as I should have liked to trace a connection between Amy Robsart and this county [Devonshire], I was not able to do so, and from the other facts I have given, I fear we have no claim to the honour of clanship with the heroine." p. 14. In short, the author is of opinion that Amy Robsart was born, not at Lidcot Hall, N. Devon, but at Stanfield Hall, Norfolk.

In the *First Report of the Committee on Devonshire Celebrities* (*Trans. Devon. Assoc.*, vol. ix., pp. 103-119, 1877), however, the following entry occurs:—"Robsart, Amy: *b* Ludcote Hall, near Barnstaple," p. 117.

I venture on no opinion on the question, being, indeed, in possession of none; but unless the same person can be born in two places, there is a Slip in at least one of the foregoing statements.

In a Query put by Mr. ALFRED RIMMER in *Notes and Queries* of 3rd November, 1877 (5th S., viii., 349), it is clear that he is of opinion that Amy was the daughter of Sir John Robsart of Sheen Court, Surrey.

VI. WALKER, Patricius.

The following statements occur in an article entitled *Rambles. By Patricius Walker, Esq. In Devon and Cornwall*, which appeared in *Fraser's Magazine* for November, 1877, pp. 575-91. (Vol. xvi., No. xcv. New Series.)

1. IVYBRIDGE AND PLYMPTON:—"On the wings of the South-Western Railway I fled along the fringe of Dartmoor, glancing down wooded valley and up rocky fell, by Okehampton and Tavistock, Ivybridge and Plympton, and so, skirting a broad inlet of sea-water, alighted in the famous town of Plymouth." p. 575.

The "South-Western Railway" would, no doubt, take a traveller to Plymouth by way of "Okehampton and Tavistock," but not by way of "Ivybridge and Plympton;" since the latter two lie on the route of the *South Devon* Railway.

2. PLYMOUTH, STONEHOUSE, AND DEVONPORT:—"Devonport is a borough with its Mayor and Corporation, and sends two Members to Parliament; Plymouth is a borough, with another Mayor and Corporation and its own two Members; Stonehouse again, wedged in between, is governed by a mere Local Board and votes for the County. If so anomalous a state of things exists anywhere else in the United Kingdom, I do not know where to look for it." p. 582.

The author has made a Slip here, as Stonehouse, instead of "voting for the county," forms part of the Parliamentary borough of Devonport.

3. DEVONPORT:—"The Dockyard was only 'Plymouth Dock' till 1824, and then suddenly flowered into the dignity of a Borough Town with the new name of 'Devonport.' Perhaps because its honours were then in their newest gloss, the Reform Act of '32 was merciful to it." p. 582.

The author has again slipped. Devonport, no doubt, received its present name in 1824, but it did not then "flower"

into either a Municipal "Borough" or a Parliamentary "Borough." The author supposes that "the Reform Act of '32" found it a Parliamentary Borough, and was so "merciful to it" as to leave it as it found it. The truth, however, is that the said Reform Act found both Devonport and Stonehouse unrepresented in Parliament; it united them as one Parliamentary Borough, with the right of sending two members to the National Council. It was, however, not until 1837 that it became incorporated as a municipality, "when it was divided into six wards . . . with twelve aldermen and thirty-six councillors." (See Worth's *Hist. of Devonport*. 1870, pp. 38-9.)

VII. WAUGH, Mr. Edwin.

An article entitled *On the Dart*, by Mr. Edwin Waugh, copied into the *Torquay Directory* of 10th October 1877, from the *Manchester Weekly Post*, contains the following passages:

1. "And all the air of this green sea-washed Devonshire seems crowded with the stirring memories of a thousand years of English renown. This is, indeed, a land of romance, both in the peculiar beauty of its natural features, and in its association with men whose very names make the blood of an Englishman tingle in his veins; for this is the native country of *Martin Frobisher*, and of Davis, the Arctic explorer, who gave name to Davis's straits, and of bluff John Hawkins, and of that grave English sea-king, *Admiral Blake*, and of Sir Walter Raleigh, and Sir Francis Drake, and the great Duke of Marlborough. This is, also, the birthplace of Samuel Taylor Coleridge, of Ford the dramatist, of *Robert Herrick*, of Peter Pindar, and Sir Joshua Reynolds, and Northcote, and Haydon, and Prout, and Eastlake, and a host of others, whose names will wrestle hard with time. No wonder that Devonshire men should be proud of their native county.

"And this pleasant land-locked harbour [Dartmouth], on the Devonshire shore, has been the scene of strange events in days gone by. Here, on the 25th of March, 1190, Richard the Lion-hearted, mustered the chivalry of England, and sailed for the Holy Land; and from this port, in 1347, a large armament set sail, under Edward the Third, for the siege of Calais. . . . And lastly, but not least interesting of all, it was from this harbour, in the month of July, 1620, that the Pilgrim Fathers set sail, in their two little vessels,

the *Speedwell* and the *Mayflower*, freighted with one hundred souls, little thinking that in so short a time as this they were to give rise, in the wilds of North America, to one of the most powerful nations the world has ever seen. . . ."

Devonshire is, without doubt, not only proud of her sons, but much too proud to think of robbing other counties of theirs, or of receiving stolen goods from the hands of anyone, and must decline consequently to receive as hers those names I have italicised in the foregoing extracts.

(A.) *Admiral Blake* was a native, not of Devonshire, but of Bridgewater, in Somersetshire, where he was born in August, 1599 (*Lives of Eminent Persons*, in *Library of Useful Knowledge*). The following Memorandum, however, in the *Plimouth Memoir's Collected by James Yonge. 1684*, connects Blake with this county:—

"1656–57. Blake grown sickly, returns home, and in sight of this port [Plymouth] dyeth, was embalmed, his Bowells buried here by the Mayors seat dore, his corps at Westminster among y^e kings." (*Trans. Plym. Inst.*, vol. v., p. 533.)

(B.) *Martin Frobisher* was not a native of Devonshire, but, according to Stow, of Doncaster, in Yorkshire. He was no doubt associated with this county, both in his life and in his death, for, to go no farther, he commanded the *Aid* in Sir Francis Drake's expedition to the West Indies; and, on 7th November, 1594, he died at Plymouth, and was buried in that town. (*P. Cyclo.*, vol. x., pp. 485–6.)

(C.) *Robert Herrick* was, of course, associated with Devonshire, as he was vicar of Dean Prior, near Ashburton, where he died and was buried in October, 1674; but he appears not to have been a native of the county, as he was the son of Nicholas Heyrick, of Cheapside, in the city of London, goldsmith. (See *Notes and Queries*, 2nd S., x., 356.)

That Dartmouth harbour "has been the scene of strange events in days gone by" will be admitted by all; it will be admitted, too, that the scene is connected with the "Third Crusade," with the siege of Calais by Edward III., and with the voyage of the "Pilgrim Fathers;" but Mr. Waugh's narrative is calculated, in each of these cases, to leave a false impression on the minds of his readers.

(D.) Richard I. neither "mustered the chivalry of England" at Dartmouth, nor was it thence that he "sailed for the Holy Land, on "the 25th of March, 1190." We learn from Hoveden (vol. ii. p. 146, Bohn's ed.) that he left England for his journey on 11th December, 1189, when he crossed from Dover to Calais; and (p. 134) that ten of his ships assembled at Dartmouth, whence they sailed in 1190.

(E.) Edward III., according to Mr. Waugh, sailed personally from Dartmouth for the siege of Calais in 1347; whereas the fact appears to be simply that the inhabitants furnished as many as 31 ships for the siege.

(F.) According to Bancroft, as quoted by Mr. Worth in his *History of Plymouth* (pp. 59, 60) the Pilgrim Fathers consisted of a small body of English Puritans, who, in 1608, settled at Leyden, whence, after a residence of eleven years, they sought a home in the New World. Having chartered the *Mayflower* of 180 tons, and the *Speedwell* of 60, they sailed for Southampton, and after a stay of a fortnight they set sail for America; but the *Speedwell* needing repairs, they put into Dartmouth, and resumed their voyage at the end of eight days. They seem to have nearly lost sight of land, when, it becoming necessary to return to port, they put back to Plymouth. From this port a portion of the party only had courage to proceed on the voyage, which, continued by the *Mayflower* alone, was finally recommenced on 6th September, 1620, there being on board a total of 101 persons, including women and children.

NORTH AND SOUTH DEVON IN CONTRAST.

BY THE REV. TREASURER HAWKER, M.A.

(Read at Paignton, August, 1878.)

DOGBERRY says to his neighbour Verges, in *Much Ado about Nothing* (iii. v.), "Comparisons are odorous;" and notwithstanding Mrs. Malaprop's dictum to Lydia Languish, "No caparisons, if you please, Miss; caparisons don't become a young woman;" I accept Dogberry's sententious statement. For in contrasting South and North Devon, Dogberry's words are literally true. The comparison of their respective beauties and merits must be "*odorous*," because only what is fragrant, and sweet, and delightful, can be produced by any handling or collision.

"How happy could I be with either,
Were t' other dear charmer away!"

exclaimed that somewhat disreputable hero, Captain Macheath, in the *Beggar's Opera*. I, a dweller now in the North, but a native of and sojourner for many years in South Devon, say, not "How happy could I be with either," but, "How happy I am to belong to both." In this matter I willingly own myself to be guilty of bigamy.

It is curious how North and South Devon answer to each other in their respective features, "Alike, yet not the same." A very distinguished scholar of my old college (Balliol), on being asked by the Master what he meant in his essay by "metaphysical unity," answered, "Oh, concentrated duality!" and without pretending to understand exactly what perhaps was not meant to be understood, I accept the phrase for my county. Of the two divisions, one may quote Helena's touching remonstrance in the *Midsummer Night's Dream* about Hermia—

"A union in partition,
Two lovely berries moulded on one stem."

Dartmoor and Exmoor at once rise to the lips of North or South folk, according to their dwelling. Exmoor proper is,

I am aware, not in the diocese of Exeter ; but its spurs stretch into Devon, and the whole is sufficiently close to claim it as belonging to Devon. The boundary of the two counties, as well as of Oare and Brendon parishes, is, I believe, defined by the Bagworthy river.

I cannot say that I know Exmoor nearly as well as Dartmoor. I have seen some very lovely bits on the skirts of the former ; as lovely, I think, as Houndtor Ridge, near Manaton, or the view up the Dart, a little beyond New Bridge, or Dartmeet, just below Brimpts ; but nothing on Exmoor, or anywhere else that I am aware of in the whole world, equals the Tors of Dartmoor—one hundred and sixty in number, I believe, with their strange, weird shapes, and fantastic names. Nothing either can exceed, I should suppose, the savage, desolate wildness of the part about Cranmere Pool, and Fur Tor, or the grim dreariness in a chilling fog of Princetown, with its granite-walled prison.

It must not be forgotten that Carrington has sung of Dartmoor in no mean or unworthy verses, but it has yet to be pourtrayed in pleasant tale, as Exmoor has been by the fascinating author of *Lorna Doone*. The savages indeed, amongst whom that fair love of John Rigg was brought up, had their likeness in the Gubbins family, near Tavistock, who devoured the baby with onion sauce on a Sunday morning, and were denounced by the terrified servant, who had hidden herself in the oven, and witnessed through the chink of the door her charge's demolition. The future heroine of a Dartmoor novelist must be of a different type from *Lorna Doone*, as the two districts are different in their aspects ; the one answering more to a fine, the other to a pretty woman, being at any rate on a much smaller scale than Dartmoor.

But perhaps some one, born and bred in North, as I was in South Devon, may set against Dartmoor the Valley of Rocks, near Lynton. I am not going for a moment to depreciate a most striking and beautiful feature of the unique north coast ; still I should uphold the cliff scenery between the Bolt Head and Bolt Tail, near Salcombe, as, if not so extensive, quite as fine. The hamlet of Hope, nestling under the Bolt Tail, renowned for its catches of lobsters, may not be so picturesque as Clovelly ; yet it has an indescribable charm under the frowning headland, vexed with continual surges of the Channel waves. And Bigbury Bay, with Borough Island, requires only to be made more easy of access to attract Plymnothians by its beautiful scenery and invigorating sea breezes. Besides, if I may for once be professional, that

district boasts of an Archdeacon—almost, from the number of churches under his pastoral care—a Bishop, and, what is more to the purpose perhaps on this occasion, not long since a most worthy President of our Association.

Of course there is nothing in North Devon like the Three Towns—Plymouth, Stonehouse, and Devonport, now almost one, with their vast population (for the West); the naval and military establishments; the mercantile and emigration traffic; the host of fishing-boats; nothing like the Breakwater at the entrance of Plymouth Sound, or the Eddystone Lighthouse further out; and I suppose the view from the Hoe at Plymouth can only be rivalled by what I have never seen, the Bay of Naples. I need not dwell upon the historical associations connected with the Hoe in the days of the Black Prince, the Armada, and otherwise.

Torquay too, of sea-side places in the West (may I not say of sea-side places anywhere?), is the queen, *facile princeps*, quite to my mind unrivalled in its natural beauty, and from the skill with which the hand of man has developed its natural beauty. And the red soil about Torquay, Teignmouth, and Dawlish seems to me to give a warmth of colouring that greatly enhances the loveliness of the south coast.

But Ilfracombe has charms—its cliffs are rocks and not earth—which have yet to be fully developed now that there are easier means of access to such an *Ultima Thule*. Westward Ho! has been patted on the back by the genial hand of Kingsley, as Loch Katrine was brought into notice by Scott's *Lady of the Lake*. Clovelly is the quaintest and loveliest of sea-coast villages, with Lundy Island in the distance. South Wales, with its teeming population and manifold industries, may almost be claimed as belonging to North Devon, from the constant communication between Swansea, Cardiff, and Newport. The Bristol Channel too, from its depth, enables ships of large burden to come much nearer the land than is possible on a great part of the south coast. American-going steamers of two thousand tons come close to Ilfracombe, from whence seventy-six steamers have been counted in the day. Moreover, from some cause, which I am not scientific enough to explain, there are often seen colours of the most varied and beautiful hue on its surface.*

I never realized Homer's *Πορφύρεον κύμα*, the purple wave, until I saw the exact hue, as I was walking along the splendid

* Whether this phenomenon arises, as it has been suggested to me, by the soil brought down from the higher part of the Channel, and acted upon by the salt water and the sun's rays, I do not pretend to say.

coast-road from Ilfracombe to Combmartin. But, why or wherefore I do not know, the iridescence, to take a long yet expressive word, of the Bristol Channel, might have led a Pagan of Old Greece to believe that Juno's messenger, Iris, was perpetually crossing from one shore to the other, and shedding her threefold colours over the sea. Again, the peculiarity has been remarked that the Welsh coast is almost constantly visible (when it is very clear it is a sure sign of changing weather) from North Devon; whereas the French coast, very little farther, is by no means a common object from the shore about Dover. Nor is the immediate Welsh coast of very high character, although no doubt the coast about Calais and Boulogne is low.

I approach now as tender a point as a lady's age—the comparison of climate. Notwithstanding the popular distrust of figures alike with facts, some confidence must now be put in statistics, especially as regards meteorology; for they are in these days carefully kept, certainly by the members of the Devonshire Association, under precise rules and conditions, or they are not accepted.

There is no doubt then that the climate of Ilfracombe is perfect, and something more, for it is half a degree warmer in winter, and half a degree cooler in summer, than that favoured spot Torquay. In both North and South Devon—excepting perhaps that district, a sort of middle passage, where it is said Pluto caught cold from the chilling wet—"the air nimbly and sweetly recommends itself unto our gentle senses;" but on the North coast it is bracing, not biting, and less relaxing than on the South.

I am not (it would be base and suicidal in me, born and bred in South Devon, so to do) going to apply the lines in the *Tempest* to the dwellers there, when Sebastian says (Act ii. 1.),

"What a strange drowsiness possesses them!"

and Antonio replies,

"It is the quality of the climate."

Nor do I, for the same reason, say with Gibbon, what he did about the Pannonians, "Perhaps the climate is adapted to the production of great bodies and slow minds." (Vol. i. cap. v. p. 248.) I am of small stature myself, and I have met with any amount of sharpness in the wildest nooks of Dartmoor; but I am bound to allow that a great deal of South Devon is soft and somewhat enervating. The North, according to my short experience, is far more calculated to

invigorate people fairly robust. It gives an appetite, which has the single inconvenience of swelling portentously for paterfamilias the butchers' bills.

The North however, it must be acknowledged, is a windy region (*ἀνεμώεσσα Τρόια*), and the necessity of walking or riding firmly against violent blasts sweeping up the Bristol Channel may account for the remarkably erect figures of the women, struggling vigorously with adversity.

You can often tell something about a country from the customs of the inhabitants. When I was a young man and visited my friends at Plymouth the magistrates always seemed to me to be trying people for stealing umbrellas—almost a necessity of life there. In North Devon you will see every market-woman jogging along to Ilfracombe with a stout handkerchief tied tightly over her bonnet, and looking anxiously to Wales, as if to pick out a soft place for her head in case it should be blown off by a sudden squall and carried across the vexed sea.

The Registrar General's reports would probably show small difference in the healthiness of the respective divisions of the county. It used to be said on and about Dartmoor that the natives lived as long as they pleased; it may be that the weak ones are all eliminated early by the climate. When I first came to my present parish in North Devon, and asked whether there were any sick persons whom I could visit, I was told in a tone of surprise, "Oh, no, sir! nobody is ever ill in Berry Narbor. There's an old man, to be sure, over 90, who has taken lately to his bed; but there ban't much the matter with him that I knows of." I thought to myself of the story of the Scotchman who said to his doctor, "Ye pu' a vara lang face, doctor; d'ye think I'm dangerously ill?" "Na, na," was the reply, "I don't think ye're dangerously ill; but I think ye're dangerously old."

In the churchyard of the old parish church at Ilfracombe, at the east end, there are two tombstones giving the names of some centenarians; but I have never been able to verify the assertion by any parochial registers, or any other authority beyond the usual, "They always said;" "There is no question about their having lived to a hundred κ. τ. λ."

However, we may fairly, I think, taking the county as a whole, affirm that for the generality of people they must be hard to please if they cannot find some spot, either North or South, where, with ordinary precautions, the usual span of life may be attained, and the threescore years and ten enjoyed after a reasonable fashion. Few places are so healthy or

fortunate as that American town where there was only one aged pauper, and he had money in the savings bank.

It has been said that although "the climate's delicate, the air most sweet, fertile the isle" (*Winter's Tale*)—for Devon is half an island—it is not productive of great geniuses or intellects; in fact that it is a sort of Bæotia, where the natives are generally heavy and stupid. I have not found North Devonians dull, in the matter of their own interests, any more than South Devonians; but I think they sometimes forget with new-comers that they must be "skillless in these parts," and ought not to be expected to know all at once what those born and bred in North Devon know.

This sort of talk, however, is difficult to refute, as it is difficult to refute depreciation of eminent lawyers, or commanders, or otherwise. No one, I suppose, will question the fact of Devonshire's many artists—Northcote, Sir Joshua Reynolds, Haydon, Samuel Prout, Sir Charles Eastlake, for instance; all, I acknowledge, belonging to the South, mainly Plymouth and its vicinity.

In theology, I would name "the learned and judicious Hooker," born at Heavitree, near Exeter, and Jewell, author of the *Apology for the Church of England*, born at Berry Narbor, a small village in the North of Devon. To represent science, there are four Fellows of the Royal Society at the present time belonging to Devon—our distinguished president for this year being one of them; but all, I am bound to say, dwell in the South.

Among those deceased there occur to me Newcomin; John Yonge, F.R.S.; Sir William Snow Harris, the electrician; Thomas Fowler, of Torrington. For literature and poetry we can boast of Samuel Taylor Coleridge, *clarum et venerabile nomen*; Gifford, Praed, Sir John Bowring, and others; whilst in the legal profession—no small test of acuteness of intellect—a host of names, ancient and modern, spring up—the Lord Chief Justice Fortescue (immortalized by Shakspere), Dunning, Sir William Follett—and, amongst living celebrities, Lord Coleridge, Chief Justice of the Common Pleas; Sir John Karslake; Sir Robert T. Collier, our President for next year. And as for gallant sailors and soldiers they are not to be counted.

Such are a few of the salient points by way of contrast between the North and South of Devon. Herrick says, somewhat sourly—

"More discontents I never had
Since I was born than here;
Where I have been and still am sad,
In this dull Devonshire."

I remember in the early days of the Crystal Palace going in with the crowd and hearing a woman say to her companion, who was rather disparaging the place, as not fulfilling her expectations: "Why, wot would ye have? Ye wants to be in 'eaven at once, ye do." And if Herrick, with that most lovely Dean Valley running up to the Moor, could speak as he did of the county, only the Elysian Fields would have satisfied him. For myself I can safely aver that I have never found it dull for a single hour in either North or South Devon. And having got to the end of my slight handling of their respective beauties and attractions, the best summing up I can give is perhaps what Sir Walter Scott says of Minna and Brenda, the two sisters, in the *Pirate*, cap. iii.

"The difference of their tempers and of their complexions was singularly striking, although combined, as is usual, with a certain degree of family resemblance."

I desire to add for myself, rejoicing in the delights of North Devon, and yet mindful of my first love, South Devon, that the verses with which Sir Walter heads his chapter from which I have quoted, do not apply to me—

"O Bessy Bell and Mary Gray,
They were twa bonnie lasses;
They bigged a house on yon burn-brae,
And theekit it ower wi' rashes.

"Fair Bessy Bell I loosed yestreen,
And thought I ne'er could alter;
But Mary Gray's twa pawky een
Have garr'd my fancy falter."

NOTES ON THE HISTORICAL CONNECTIONS OF DEVONSHIRE PLACE-NAMES.

BY R. N. WORTH, F.G.S., ETC.

(Read at Paignton, August, 1878.)

IMPORTANT particulars concerning the early and unwritten history of our county, may unquestionably be gathered from an examination and analysis of our Devonshire place-names. The subject is too large to be discussed with adequate fulness within the limits of a paper like the present: but it is still possible to draw some general conclusions, which may not be without their value, and to show that the place-names of Devonshire, unaided from any other source, yield much and certain information concerning that early period of history for which we are otherwise obliged to fall back upon legend; or to accept the vague, bald, statements of a chronicler, first reduced to writing when the tradition in which they originated had been worn down by the attrition of centuries. Etymological studies are commonly uncertain; the conclusions often ludicrous. As a rule too much is made of mere coincidences, and conclusions reached unauthorized by any wide generalization. Many of our derivations are mere guesses—happy or otherwise, as the case may be. Not long since it was suggested that because the chief priest of the Thibetan religion is called a *lama*, and because *beth* is the Hebrew for house, it did not as a matter of course follow that Lambeth took name from the residence of the primate of all England. We can all see the absurdity of such ~~an~~ etymology as that, but there are hundreds of derivations current not one whit less ridiculous, and we have our share of them in Devon.

To be unfettered in my enquiry, I have endeavoured to take what seems to me an independent course.* No doubt

* "Authorities" were not consulted until the results of the investigation had assumed definite shape, with the exception, for the Saxon words, of Bosworth's *Anglo-Saxon Dictionary*, and, for the Keltic, of Williams's *Lexicon Cornu-Britannicum*.

many of my conclusions will seem as far-fetched to some of my hearers as those from which I am compelled to dissent do to me. Be it so. No etymologist is infallible; but the nearest approach to certainty will surely lie in the effort to be systematic, and in the attempt to pursue the investigation on scientific principles. At such system and science I have therefore aimed. The general principles which prescribe the direction of the investigation are sufficiently clear. Simple coincidence is of all things to be most distrusted; and the most plausible derivation may be questioned if some special fitness cannot be detected either in the place itself or in its belongings, among which, for the present purpose, may be classed its owners and its history. All place-names of primæval character have their meanings, and are revelations of the early history of the locality in which they are found. Commonly these names are descriptive of material peculiarities of the places to which they were given, not of any accident of ownership. Places gave name to people long before people gave name to places. The language of the description indicates the oldest race associated with the place with whose name we are dealing, of whom we have any knowledge. Except in one important class of cases, derivations of mixed language are to be avoided, save in the rarest instances. It is mere folly to divide a word into syllables, and then hunt about until we find some tongue in which each syllable may be twisted into a meaning. We have had one illustration on this head in Lambeth. Suppose we take Paignton for another. *Paign* corresponds very closely in sound with the French word *pain*, "bread," and *ton* is an English measure of weight that needs no description. Are we therefore to conclude that Paignton means "a ton of bread," and to see in the name some mysterious reference to the traditional Paignton charter-pudding? Mixed derivations are, however, common where a generic word in one tongue is supplemented by a specific word in another; or where, through lack of understanding, a common name is taken for a proper name, a generic or specific name attached, and a compound reduplicative or accumulative word produced. Finally, no derivation can be accepted with safety which is not consistent with the oldest-known form of the name under examination.

I shall deal in the first place with the river names, amongst which our oldest examples of nomenclature are to be found; then with the names of Dartmoor (our mountain names); and lastly with those of our parishes, supplemented by examples drawn from an examination of several thousand names of towns, villages, and farms. With so wide a basis

of investigation I hope that individual errors will be of little importance, and will not materially vitiate my general conclusions.

First for our rivers.

Reasoning *a priori* we should conclude that as a rule the largest rivers would be most retentive of their original names. This is clearly so in Devon. We have the Tamar, the Tavy, the Taw, the Torridge, and the Teign, a remarkable group, and unquestionably related, though Mr. Isaac Taylor * derives the last-mentioned from *don*. We have in all, however, the same root that we find in the names of the Thames, Tees, Tay, Tweed, Taff, and many other rivers; and there can be little doubt that this root is a generic word for water, probably to be found in the oldest branch of the Keltic tongue, and which we may take as *ta* or *tau*. For want of recognizing this relationship there has been much confusion and inconsistency in the attempts to deal with these names. Tamar has been derived from the Gaelic *tamh*, "gentle;" and it has been held that the Torridge somehow got its name from Torrington. If Mr. Kemble † is right in treating Torrington as the "tun" of the Thuringi, this must be so; but I shall hereafter give reasons for believing the existence of clan names in Devon very mythical. Treating the root-word as meaning simply "water," we find that the final syllables in Tamar, Tavy, and Torridge, are really nothing more than distinctive suffixes in a later branch of the Keltic language, that which descended to the Cornish; closely allied to the Kymric, and which, for the sake of distinction, we will here call the Kornu. Endless difficulty has been created while attempting to deal with Cornish and Devonshire etymologies by forgetting that the Gaelic, the Kymric, and the Kornu-Keltic, or Kornu, were distinct branches of the Keltic tongue, and by endeavouring to square everything in the West of a Keltic character to Gaelic models. I think the Gaels, by whom I understand the Kelts of the wave immediately succeeding the first Keltic immigrants, understood the root-word, because they did not attempt further definition. But the Cornish branch of the Kymry treated this *ta* or *tau* as a proper name, and proceeded to distinguish one *tau* from the other by suitable affixes. *Ta-mar* is simply *Ta-mawr*, the "big Ta," "or water;" *Ta-vy*, *Ta-veor*, the "little Ta." In the *Taw* we have the root untouched; but *Tor-ridge* is *Ta-rhyd*,

* *Names and Places*, p. 219. † *The Saxons in England*, vol. i. appendix A.

the "ford Ta," the "ford" (*rhŷd*) by which the Romans crossed that river being one of its most distinctive characteristics in early times. In *Teign* we may have Ta-*eign*, the "icy" or "cold Ta." The Exe and the Axe present no difficulty. They are clearly from the Gaelic *uisg*, "water," which we find also in the Esk, the Usk, and many another river name. We have *uisg* too in Ockment, but distinguished by a Kornu suffix, probably *maenic*, "stony," aptly descriptive of the bouldered bed of a Dartmoor stream. And it is probable that *uisg* also appears in *Ugbrook*, but here with a Saxon reduplicant.

In the Avon we have *afon*, one of the commonest Kymric words for a river. The Dart alone of the larger rivers preserves a name of distinctly Kornu character. It is the same name as Derwent, which Mr. Taylor* renders "clear" water, from *dur-gwyn*. *Dwr* is the chief Kornu word for water, but *gwyn* really means "white;" and the "white water" is an epithet very fairly descriptive of a stream which tumbles and splashes so continuously around and over the obstructions in its course. The old form of Dartington is Darentun. There are, too, other Darts in Devon.

So far all is clear enough; but further investigations in this section are attended with some difficulty. Of the names of several of the smaller rivers, it would be unsafe to pronounce definitely whether they are Keltic or Teutonic; and some may be mixed. The names of many end in *y*—Yarty, Coly, Cory, Bovey, Meavy, Tiddy, Becky, Creedy, Torry, for example—and this *y* may be either the Kymric *wy*, Kornu *gy*, or Saxon *ea*, which alike mean "water." I do not think we can treat it as a diminutive.

There can be little doubt that the names of the Derle, Deer, Yealm, Bray, Tinhay, Torry, Coly, Kenn, Mole, Plym, and possibly the Otter, are of Keltic origin. In the Derle and Deer, and possibly in the Torry, *dwr* appears, and Otter may very well be *y-dwr*, "the water," though the suggestion that it was named after the animal of the same name is not wholly to be cast aside. Yealm, which has been found a difficult word to deal with, is probably from the Kornu *hayle*, a "river." The old form is *Yale*, and the modern name Yealm arises curiously enough from the Yale having given title to Yealmpton, *Yale-ham-tun*, the "enclosed dwelling on the Yale." In the contraction to Yealmpton the *ham* has been lost sight of, and the word read as the "*tun* of the Yealm." We have

* *Names and Places*, p. 209.

something of the same kind at Walkhampton, where a feeder of the Tavy is made to rejoice in the odd term of Walkham. The river is really the Walla, a common name for Dartmoor streams (perhaps from the Kornu *walla*, "lower," though Mr. C. Spence Bate, with more likelihood, takes it from the Kornu *wheala*, to "work"—i.e. in the tin streams*) and its valley the Walla-cwm. The *tun* of the Walla-cwm became Walkhampton, and the river the Walkham. As the familiar name of the place is Wackington, a golden opportunity has been lost of assigning it to the Wackings, so named from their stoutness in fight (!). We seem to have a name of the same class in the Batham, though here wholly of Saxon origin. *Baeth* is a Saxon word for water, whence "bath." Bampton is really *Bath-ham-tun*; misread as the "*tun* of the Batham." In Morebath the name of the river appears in its original form.

Plym has always been a crux, and I cannot be sure that I have solved its mystery. However, the oldest form is not Plym, but Plyn, and "lin" is, with little doubt, the Kornu *lyn*, "a lake" (not the Saxon *hlynn*, a "stream," which we have in the Lyn river). The estuary of the St. Germans river is the *Lyn-her*, or "long lake;" and the P in Plyn may stand for *pen*, and thus give us the "head lake," or "head of the lake," if, as is possible, Plympton is the older word. In that case, I would suggest that Laira, or Lery, the name now given to the Plym estuary, may be the true name of the river. *Llar* is, however, "overspreading" in Kymric, which, with *wy* or *gy*, "water," would very well apply to the Laira as it is; or we may take the Kornu *le*, "a place," and *ryn*, "a channel." Still all this is mere speculation, and no satisfactory derivation has yet been suggested for the Meavy, one of the two streams which unite to form the modern Plym, if the Cad be a distinct river, and not the Plym itself. Chapple suggests *mwy* "enlarged or augmented" water.† We are in the same position with regard to the Erne, the root of which Polwhele found in Armenia, and hence held it indicative of Armenian colonization! Chapple doubtfully hints *iar*, "a river," prefixed to *am*, "water." Nor can I satisfy myself with regard to the Sid. I know of no Keltic root that will fit. *Sid* is "broad" in Saxon, which the river is not; and *cid*, or *cyd*, is "strife or contention," little less applicable. Nor will Chapple's *saeth*, "an arrow," do any better.‡ Mr. Pulman suggests *y-nant-sidin*, "the winding stream."§ In the Kenn and Mole and Bray we have apparently instances

* "The Etymology of Dartmoor Names." *Trans. Dev. Ass.*, vol. iv. part ii. p. 527. † *Review of Risedon*, p. 64. ‡ *Ibid*, p. 68. § *Local Nomenclature*.

of transference by Saxons, who, unaware that *cein* meant a "ridge" in Keltic, and *moel* and *bre* each signified a "hill," called the streams thence flowing by the names of the places whence they took their rise. Coly would be of the same class if derived from *col*, Kornu for "neck, or ridge," which would make Coleridge a reduplication; but *coll* is Kymric for "hazel." The Tinhay may be *Tin-gy*, Kornu, the "water in the bottom;" but query. The Culm *may* be from the Kornu *cam*, crooked; but this is also doubtful.

Only when we come to the smaller streams do we distinctly trace the Saxon. It is quite possible, nay, almost certain, that many of the minor affluents of the principal rivers had no distinctive name in early Keltic times; nor would they receive any until the county was more thickly populated. The Lyn and Batham have been mentioned; the Yeo is the Saxon *ea*, "water;" in the Lyd we have *hlyd*, "loud;" Clist is said to mean a "drain or dyke" (?). Chapple suggests Gaelic *leasg*, "sluggish." * In the Becky we have the northern form for a brook, *beck*. A point of considerable importance is the variety of the words used to designate the lesser streams. We have brook, beck, burn, bourn, lake, water, and fleet, beside the *gy* or *ea* which appear in the terminant *y*. With the possible exception of fleet, all these names are used to express precisely the same thing—a small stream of water, or rivulet—and they are all of Teutonic origin, though beck and burn and lake may be regarded as northern forms; as Norse rather than Saxon. Nor is this all. These words are not used interchangeably and at haphazard, but upon what appears a kind of system. It has been often pointed out that there is a peculiar local character about certain of our name-words; and Mr. R. J. King, in his presidential address at Torrington,† made some valuable remarks on this head. Mr. Spence Bate, in his "Etymology of Dartmoor Names,"‡ also gives important details on this very point. He says that on the Erme all the streams are known by the name of *lake*; on the Avon by that of *brooks*; on the Dart mostly as *burns*, but with some *brooks*; while on the Teign the latter word again reigns supreme. Fleet, always applied to a little stream having a tidal connection, we find on the south coast. Stonehouse Lake was once Stoke Damerel Fleet. There are Pomphlett on the Plym, Coffleet on the Yealm, Flete and Pamflete on the Erme, Warfleet on the Dart, and the stream which flowed down the main line of

* *Review of Risdon*, p. 62. † *Trans. Devon. Assoc.*, vol. vii. pp. 40-1.

‡ *Ibid.*, vol. iv. part ii. pp. 525-6.

what is now the chief thoroughfare of Torquay to the harbour was, as we learn from Mr. White's interesting history,* known by the same name. This peculiar distribution of different names for the same thing points inevitably to the conclusion that the earliest Teutonic settlers in Devon were of various races, each with its own peculiarities of dialect. Mr. Spence Bate sees in the occurrence of names of Norse character in the basin of the Dart traces of Scandinavian intercourse, and to a certain extent I am inclined to agree with this, though without following him through all his deductions from that fact.

Secondly for Dartmoor.

When we turn from our rivers to that which we may term our mountains—Dartmoor—we are no longer confronted by words distinctly representing an elder race. The very name of the district is clearly quite modern by comparison with such vestiges of hoar antiquity as the names of our principal rivers. Had the size of the issuing streams alone dictated the appropriation of the title, there is little reason why *Teignmoor* or *Tawmoor* should not have stood on nearly equal terms with *Dartmoor*; and hence we may conclude that the present name was given by men who were more familiar with the Dart, in its connection with the moor, than with any other of the moorland rivers. That these men were of Teutonic race is shown by the fact that they did not use the original name of the river, but its corrupted and contracted form. Dartmoor once had its distinctive Keltic name. That name can be traced no longer (unless indeed Dartmoor was the original *Deuffneynt*, the "land of deep valleys," whence we derive Devon), and with it, so far as nomenclature is concerned, has disappeared nearly all the evidence of Keltic occupation. At the first glance it may seem strange that just where there are the most important material traces of the existence of an aboriginal population; just where the Britons, driven to their fortresses, made the last stand against Saxon encroachment; we should now find fewer names of Keltic origin than anywhere else in the county. But it is not strange after all. The handing down of place-names to a race of alien tongue implies contemporaneity of acquaintance, if not of occupation. When Kelts and Saxons dwelt side by side, places as a rule would keep the names the elder dwellers had given them. If on Dartmoor the elder race were abso-

* *The History of Torquay*, p. 100.

lutely dispossessed, and the two never really contemporaneous, when the Britons were driven out the work of naming would have to be done over again by the conquerors. The paucity of Keltic names on Dartmoor thus leads me to conclude—first, that in the early days of Saxon colonization in Devon, Dartmoor remained practically a *terra incognita*; secondly, that when the Saxon did find his way into Dartmoor, the Briton was wholly expelled. These are two important points in the history of our county.

It is quite true that there are Keltic names associated with Dartmoor; but almost without exception they are those of places on the borders, with which Saxon dwellers in the lowlands might readily become familiar. Such are Manaton, *maen-y-dun*, the “stony hill;” Bowermans Nose, *veor-maen*, the “big stone”—*nose*, of course, is Saxon; Coryndon Ball, *caer-y-don*, the “hill camp”—Dr. Bannister * gives “Ball” as a “rounded hill;” Cosdon (commonly called Cawsand) Beacon, *cors-don*, the “moor hill;” Pen Beacon, and Pen Shiel, now Shell Top, in which we have the Kornu *pen*, a “head”—*shell* or *shiel* is a northern Teutonic form for a shed dwelling. Hamildon which *may* be *ymyl-don*, the “boundary hill,” as Amicombe *may* be the “boundary coombe” or valley. And in connection with Hamildon it is not unimportant to note that *grim* is a Teutonic word for boundary. Grimspound is on Hamildon.† Beyond such names, and some of these are doubtful, those to which we can assign a definitely Keltic origin are few and far between. The *Walla* of the numerous Walla-brooks, is undoubtedly Keltic, and everything is in favour of Mr. Bate’s derivation from *wheala*, as referring to the tin-stream works;‡ but as the Saxons must have had some acquaintance with these, they present no difficulty. Other names which may be cited are Clannaborough, which perhaps preserves the Kornu *llan*, “an enclosure;” Cowsick = *cau-izzack*, the “lower enclosure;” Dunnagoat, the final syllable of which is clearly the Kornu *coed*, “a wood;” while in *dun* we have “hill” = *dun-y-coed*, the “wooded hill;” and Henbury, *hen*, “old.” Merrivale and Merripit (Meripit Hill), if they are Keltic in origin, have nothing merry about them. The most probable derivation is from the Kornu *marow*, “dead,” while *vil* (query, whence vale), by the way, is a “thousand.” All who know

* *Glossary of Cornish Names.*

† The similarity to Scandinavian personal names of several Dartmoor place-names, instanced by Mr. Spence Bate, may be explained by both being of kindred origin; for personal names in these days were descriptive likewise.

‡ See ante, p. 280.

the Moor are familiar with the fine series of pre-historic antiquities above Merrivale Bridge.

On the other hand, the names of most of the minor streams and of nearly all the tors are distinctive and descriptive in Saxon. Thus we have the Rattlebrook, Cherrybrook, Blackbrook, Redbrook, Middlebrook, Dedlake, Drylake, Langlake, Wid(e)burn, Har(higher)burn, and other such among the streams. Of the Tors we may note: Fox Tor, Vixen Tor, Hound Tor, Lynx Tor, some of which may be named after animals; Hey Tor = "high tor;" King Tor; Longafor Tor; Ger Tor; Lough Tor = "low tor;" the Staple or Steeple (? steep hill) Tors; Mis(t) Tor; Pew Tor, perhaps from the same root as "pew" in a church, in consequence of the singular rock enclosure of its summit (*pew* = literally a raised place); Rippon Tor (*rypan* to "tear up"—Saxon); Sharpitor = the "sharp tor;" Sittafor Tor (*sith*, a "path"—Saxon); Yes Tor (*yst* "storm"—Saxon).

Lints or Lynx Tor has been derived from the Kornu *lynnic*, "moist," and this may be so, though a trivial derivation from some fancied animal resemblance is not unlikely. Sheeps Tor is a modern corruption of Shittistor. There is considerable difficulty in dealing with words commencing with *ch* and *sh*, and sometimes *c* and *k*, as all four forms are occasionally interchanged, to the great confusion of etymology and etymologists; but whatever Sheepstor may have been, it is clearly not Keltic. Leather Tor has been traced to the Kornu *ledr*, a "cliff;" I would rather connect it with the Saxon *hlith*, a "declivity, slope." We see the uncertainty of many of our etymologies in such a word as Bottor, where *Bot* may be Kornu *bod*, a "house;" Gaelic *bot*, "fire;" or Saxon *botl*, a "dwelling," as in Bottle Hill, near Plympton. Stangator may have a connection with the Kornu *stean*, "tin." It is more likely that the *stanga* stands for "stony," which in Kornu would be *maenic*, as in Meneage. And thus with very few exceptions, even where the origin is doubtful, the Saxon derivation is at least as likely as the Keltic, while those names that are clearly Keltic are very few indeed.

Of course this hypothesis altogether annihilates the Dartmoor Druids. Evicted from the rock basins by the geologist, they cease to be tenants of the "wood of wise men." Almost equally it disposes of the theory which has named so many a tor after some god of "ancient heathenese." There is not the slightest foundation for the supposition that we are to find a relic of the god Esus in Hessary, which is really Hisworthy; or to read Miser, the moon, in what is so self-evident

as Mist Tor. The name of the Dewerstone is as reasonably to be derived from the Keltic *dwr*, "water," as from the Saxon god *Tiw*. Nor is there any ground for Mr. Taylor's identification of *Sætere* in Satterleigh, or for his finding a mound dedicated to *Woden* enshrined in the name of Wembury. But of these more hereafter.

Bel in Belliver Tor and similar names may, as Mr. Taylor says, be either Teutonic, Celtic, or Semitic;* and it is therefore a very uncertain foundation for any theory. I shall find none upon it further than this, that *bael-fyr*, according to Bosworth, means a "funeral fire," and that Belliver, with the natural dialectic interchange of *v* for *f* common in the West, is precisely that phrase. The lighting of fires for various purposes on high places is a practice common to all nations, adopted for a variety of reasons, some superstitious and some purely secular. It is at least probable that *bel* may distinguish some eminences put to such a purpose, as we know that *brent* did in later times, and still more recently *beacon*, all prefixes or affixes found in or near Dartmoor.

The name of one notable Tor has yet to be noticed. That of Crockern Tor, says Mr. Taylor, "evidently refers to a deliberative assembly;"† and he connects it with the Welsh *gragan*, "to speak loud," whence he derives "croak." It is not perhaps going too far to suggest that we should never have heard of such a derivation as this, had not Crockern Tor been the seat of the old Tinnors Parliaments, which have been assumed to continue a purely hypothetical ancient British deliberative assembly. We may reasonably believe that many of the members who assembled on the Tor were "croakers;" but that will not help us to the etymology of the names of such places as Crockernwell and Crockernford, which have no immediate connection with the Tor or its belongings, and which it is fair to suppose must have an allied origin. Crocker means simply "a man who makes croaks," a rough potter; and the Crocker family of Devon bore the canting arms of three crows, or "croakers." Prince notwithstanding, the Crockers never had anything to do with Crockern Tor; but there is nothing far fetched in the suggestion that we may have in its name a Devonshire version of the Crow Hills and Crow Castles, which are by no means uncommon in other parts of England. The Saxon, however, also gives us *croc*, a "barrow," and *ern*, a "place," or an "eagle;" and there is the Kornu *carreg*, a rock.

* *Names and Places*, p. 345.

† *Ibid*, p. 308.

If Wistmans Wood refer to wise men at all, it may hand down the memory of the legislators whom Mr. Taylor treats with such irreverence; for they were wise, or should have been. Those who have suggested its relation to the Druids, have overlooked the fact that the name is Saxon, and not Keltic, at least in its present form. A very plausible Keltic derivation may be suggested indeed in *uisg-maen-coed*, the transference of which into Wistmans Wood is much more easy than the development of *cwm-ta-coed*, "the wooded valley" in Cornwall, into "Come-to-good!" Only *uisg-maen-coed* would mean the "stony wood by the water," a most accurate description of the spot, but shutting the Druids out very completely.

If you compare the current names on Dartmoor with those of similar districts in Cornwall, you will see how thoroughly the British, who, as we know from the remains of their dwellings, inhabited the Moor in large numbers, must have been extirpated. Not only are the names almost wholly Saxon, but some of the most distinctive Kornu words appear to be altogether absent. There are one or two *pens*, a possible *llan*, and perhaps a *caer* or so; but the *tres* and the *pols* and the *cairns* disappear, and *worthy* replaces *llan*, and *bury caer*, to such an extent as to become quite distinctive. There are "clapper bridges" on the Moor which date back to Keltic times; but where is the Kornu *pons*? We shall hardly, I think, agree to see it in Post Bridge; yet we do find it elsewhere in the county.

A fact which is largely suggestive also, is that in addition to the smaller streams of the Moor bearing for the most part Saxon titles, we should have such names as the East and West Dart, the East and West Okement, and the East and West Teign. These distinctions must have been the work of men who followed up the rivers from the lowlands at a time when the original Keltic names of the tributaries had been lost, and who knew as little which was the true Dart or the true Teign as our African explorers until recently did of the true Nile.

Thirdly, I come to our ordinary place-names.

For the basis of this branch of the enquiry the names of the elder parishes and towns, excluding subdivisions of the latter, are taken. They are fairly typical; and we may, as a rule, regard the places to which they belong as having been of special importance in very early days. They are nearly five hundred in number; and I have supplemented them

with a list of names of Keltic type, selected from the names of towns, villages, farms, and other places in the county generally.

The immense majority of our parish and town names are of Saxon origin ; and with very few exceptions the remainder are Keltic. They are almost invariably descriptive, either of the character of the place, of its surroundings, of its position, of some peculiarity or special feature, or of ownership. Hence they afford valuable material for tracing the course of early history. As our first group let us take names indicative of settlement or residence.

Compounded with *tun*, an enclosure, whence "town," we have:—Alvington (East and West), Alphington, Alfrington, Alwington, Arlington, Ashburton, Ashprington, Ashton, Atherington, Aveton Gifford, Bampton, Bicton, Nympton (Bishops, Georges, and Kings), Tawton (Bishops, North, and South), Teignton (Bishops and Kings), Blackawton, Boyton, Bratton (Clovelly and Fleming), Braunton, Brixton, Burrington, Charleton, Cheriton (Bishop and Fitzpaine), Chittlehampton, Clawton, Cockington, Cofton, Colaton (Raleigh and St. Mary), Colyton, Compton Gifford, Coryton, Crediton, Collumpton, Dartington, Dolton, Drewsteignton, Dunterton, Ermington, Feniton, Fremington, Halberton, Harberton, Hempton (Broad and Little), Highhampton, Holberton, Honiton, Ilsington, Kenton, Kilminster, Knighton, Lamer-ton, Lifton, Luton, Lynton, Manaton, Merton, Milton (Abbot, Damerel, and South), Okehampton, Monkeokehampton, Monkton, Moretonhampstead, Molton (North and South), Newton (Bushel, Abbot, Ferrers, Poppleford, St. Cyres, St. Petrock, and Tracey), Otterton, Paignton, Pilton, Plympton (Erle and St. Mary), Puddington, Salterton (Budleigh and Woodbury), Seaton, Silverton, Slapton, Sourton, Sowton, Spreyton, Staver-ton, Talaton, Tamerton (Foliot and North), Templeton, Thor-verton, Thrushelton, Tipton (Hellions and Pyne), Walkhampton, Werrington, Worlington (East and West), and Yealmp-ton.

Of the 117 *tuns* here set forth, some at least must be corrupted from *dun*, a "hill," whence "down," which like *cwm* or *coombe* for valley, is used both by Kelt and Saxon. Don and ton are very apt to be confounded, and the *dons* may as well therefore be added here — Brendon, Bittadon, Faringdon, Leusdon, Marsdon, Sheldon.

Stocks come next to *tuns* in importance. A *stock* or *stoke* was an enclosure defended by palisading ; in short, "stockaded." And thus we have Culmstock, Frithelstock, Plymstock, Revel-

stoke, Stoke Canon, Stoke Damerel, Stoke Fleming, Stoke Gabriel, Stoke Rivers, Stokenham, Stokeinteignhead, Tavistock, Tawstock, Tunstall (= Dunstock), Stockland and Stockleigh (Pomeroy and English).

Stowe, "a place," is nearly allied to *stoke*, and the two are occasionally interchanged. Of this class are Bridestowe, Instowe, Jacobstow, Maristow, Petrockstow, Staverton (= Stowfordton), and Stowford.

Stead, "a place," is only seen in Moretonhampstead.

Worthy is an enclosure of a less definitely defensive kind than a *tun* or a *stoke*. In this county it also assumes a more individual character. The parishes bearing this suffix are—Bradworthy, Bulkworthy, Cornworthy, Holsworthy, Pyworthy, Widworthy, Wembworthy, and two Wolfardisworthys. Verstegan* defines a *wearth* as "a place situated between two rivers," &c., and traces to this root the *weirs* of our rivers.

Bury, on the contrary, is distinctively warlike in its character, and commonly marks the site of an ancient camp, while in *borough* it approaches more nearly to the germ of our modern idea of a *tun* or town. We have—Ashbury, Berry (Narbor and Pomeroy), Bigbury, Blackborough, Broadhembury, Cadbury, Clannaborough, Cookbury, Countesbury, Denbury, Kentesbury, Malborough, Membury, Modbury, Musbury, Payhembury, Posbury, Roborough, Sidbury, Thornbury, Ugborough, Wembury, Wolborough, and Woodbury.

Ham is the common Saxon word for dwelling, and occurs with moderate frequency—Abbotsham, Brixham, Chittlehampton, Chittlehamholt, Dittisham, Georgeham, Gittisham, Huntsham, Highampton, Huxham, Littleham, Marhamchurch, Moretonhampstead, Northam, Okehampton (?), Otterham, Parkham, Powderham, Sydenham, Stokenham, Topsham, Walkhampton (?).

Cot is one of the characteristic Devonshire suffixes. It means very much what we now understand by a "cottage," of which it is the root. We find it in the names of only five parishes—Alverdiscott, Luffincott, Tetcot, Escot, and Harra-cot. This, as compared with its general comparative frequency, is some indication that the cots were originally of little importance. *Sell*, a cottage superior to cote, appears in Zeal Monachorum; and in Huish we may probably see the Saxon *hus*, "a house."

Week, for *vic* or *wic*, an "abode" (strictly, according to Mr.

* *Restitution of Decayed Intelligence*.

Kemble, a "country house," as of a king or bishop), is found in Germansweek, Highweek, and Pancrasweek.

Will and *well* also stand in Saxon for an "abode," though the latter form is often undistinguishable from *well*, a spring or natural reservoir of water. Probably the well in most of the following has the residential meaning, but Holwell in all likelihood = Holywell: Abbotskerswell, Coffinswell, Dunkerswell, Kingskerswell, Loddiswell, Offwell, Ogwell (East and West), and Shirwell. We may have here too the Norman-French *ville*.

For our second group we take names indicative of position.

A large number of parishes, and a still larger number of other places, are named after the rivers on whose banks they stand. Hence we have—

Ashburton, from the *Ashburn*, now the Yeo.

Axminster and Axmouth, from the *Aze*.

Aveton Gifford and Blackawton, from the *Avon*.

Ermington, from the *Erme*.

Broad Clyst, Clyst Fomison, Clysthidon, Clyst Honiton, Clyst St. George, Clyst St. Mary, and Clyst St. Laurence, from the *Clyst*.

Collaton Raleigh, Colaton St. Mary, and Colyton, from the *Coly*.

Crediton, from the *Creedy*. Mr. T. Karslake suggests a Keltic dedication to St. Creed as the origin of the name of the town, and thence of the stream.*

Collumpton, Culmstock, and Uffculme, from the *Culme*.

Dartington and Dartmouth, from the *Dart*.

Exbourne, Exminster, Exeter, Exmouth, and Netherex, from the *Exe*.

Broadhempston and Littlehempston, from the *Hems*.

Harberton and Harbertonford, from the *Harburn*.

Ide and Ideford, from the *Ide*; unless indeed the former parish gave title to the stream, from its dedication to St. Ida—another hint for which we are indebted to Mr. Karslake.*

Silverton, from the *Silver*.

Thrushelton, from the *Thrastle*.

Kenn and Kenton, from the *Kenn*.

Northlew, Lew Trenchard, and Lifton, from the *Lew*.

Bampton and Morebath, from the *Bath(am)*.

Lydford, from the *Lyd*.

Lynton, from the *Lyn*.

North and South Molton, and Molland, from the *Mole*.

North Bovey and Bovey Tracey, from the *Bovey*.

* "Traces of the Ancient Kingdom of Danmonia outside Cornwall." *Brit. Arch. Assoc. Journal*, vol. xxxiii.

Otterham, Ottery St. Mary, Otterton, Upottery, and Ven Ottery, from the *Otter*.

Okehampton and Monkokehampton, from the *Okement*.

Plymouth, Plympton, and Plymstock, from the *Plym* (?). But see *ante* on the derivation of the *Plym*.

Sidbury and Sidmouth, from the *Sid*.

Torrington (Black, Great, and Little), from the *Torridge*.

Tawton (North, South, and Bishops), from the *Taw*.

Talaton, from the *Tale*.

Tamerton Foliot and North Tamerton, from the *Tamar*.

Mary Tavy, Peter Tavy, and Tavistock, from the *Tavy*.

Bishops and Kings Teingtons, Teignmouth, Teigngrace, Drewsteignton, and Coombe and Stoke inteignhead, from the *Teign*.

Walkhampton, from the *Walkham*.

Yealmpton, from the *Yealm*.

Yarcombe and Yarnscombe, from the *Yarty*.

A numerous class of names is compounded with *ford*. This is natural; for in early days fording places were localities of the first importance as a means of keeping up communication. We have Ashford, Beaford (by-ford), Bideford (by-the-ford), Bradford (broad-ford), Brampford Speke, Bridford, Brushford, Chagford, Diptford (deep-ford), Dunsford, Eggesford, Harford (higher-ford), Harpford, Harbertonford, Ideford, Ilfracombe (originally Ilfordcombe), Lapford, Lydford, Newton Poppleford, Okeford, Putford (East and West), Rackenford, Sampford (Courtenay, Peverill, and Spiney), Sandford, Shillingford, Sherford, Stowford, Staverton (stow-ford-ton), Tiverton (two-ford-town), and Washford Pyne.

Bridges are few in number, and all of later date—Bridge-rule, Horrabridge (higher-bridge), Ivybridge, Kingsbridge, Swymbridge, and Thelbridge.

Of other names in which a general connection with streams is shown we have: *Burn* in Ashburton, Harberton, Harbertonford, Tedburn, and Exbourne; *brook* in Colebrooke, Dodbrook, and Shobrook; *water* in Ashwater; and finally *shute*, in Shute, which means specially a narrow rapid stream, a "water spout." The Shute brook is also called the Umborne.

The Keltic *cwm* and the Saxon *coombe*—"a valley," supply many names, and show how much more in favour sheltered positions were for settlement than those which were exposed. I find Ashcombe, Awliscombe, Babbacombe, Branscombe, Burlescombe, Challacombe, Coombeinteignhead, Coombe (Martin, Pyne, and Raleigh), Creacombe, Doddyscombesleigh, Haccombe, Holcombe (Burnell and Rogus), Hollacombe,

Ilfracombe, Parracombe, Salcombe (salt-combe, and Regis), Sutcombe (south-combe), Welcombe, Widdecombe, Withecomb Raleigh, Yarcombe, Yarnscombe.

On the other hand we have only three ridges—Coleridge, Oldridge, and Witheridge; but it should be remembered that a very large proportion of the *burys* are in high situations chosen for defence.

In the next group we may place names indicative of the condition of the localities at the time the names originated.

The most numerous and important class of this section includes the names in which *leah*, *leigh*, *ley* appears, originally "an open place in a wood." This subsequently came to mean little more than a field. We may identify it with the *pasture* of *Domesday*, and may fairly assume that where we find it large clearings formerly existed. Here we have Bickleigh (2), Bondleigh, Buckfastleigh, Budleigh (East and Salterton), Butterleigh, Cadeleigh, Calverleigh, Chawleigh, Chumleigh, Chudleigh, Clovelly, Cotleigh, Doddiscombsleigh, Filleigh, Gidley, Goodleigh, Hatherleigh, Hittisleigh, Iddesleigh, Inwardleigh, Kennerleigh, Lustleigh, Mariansleigh, Monkleigh, Morleigh, Northleigh, Satterleigh, Southleigh, Stockleigh (English and Pomeroy), Stoodleigh, Throwleigh, Warkleigh, Westleigh, Winkleigh, Woodleigh.

Ing is Saxon for a "meadow," and occurs in several parish names. It answers to the *pratum* of *Domesday*; but has been interpreted by some authorities in the sense of a clan name. Mr. Taylor, following Mr. Kemble,* gives as the clan names of Devon—The Ælings, whence Allington; Ecgings, Eckington; Ælphings, Alphington; Arlings, Arlington; Ermings, Ernington; Burrings, Burrington; Cyllings, Chillington; Dartings, Dartington; Holings, Holington; Lullings, Lullington; Paetings, Puddington; Walsings, Washington; Wiltings, Willington; Waerings, Werrington; Thuring, Torrington.

This list, however, by no means covers the *ings* of the county; for we have *ing* parishes in addition—Ashprington, Atherington, Bickington, Cockington, Faringdon, Fremington, Ilsington, Kilmington, and Worlington. Shillingford I do not include, because I derive it from *shealing*, a rude shelter, a word still common in the North. I will not go so far as to say that there are no clan names in Devon; but we should require very strong evidence before we admitted the majority of those assumed. The likeliest is perhaps the Ælphings, who may be held to appear in Alvington, Alphington,

* *Names and Places*, pp. 518, 537. *Saxons*, vol. i. Appendix A.

Alfington, and Alwington; but the suggestion that Ermington is not named from the Erme, Dartington from the Dart, and Torrington from the Torridge, only requires to be stated to refute itself. These assumed clan names, if genuine, would infer the existence in the county of the ancient division of the *mark* in a well-recognised form; but it does not seem likely that Devonshire became Saxon at such a date and in such a way as to allow of this form of common land being established as a general system. The personal element in ownership had made some advance when the conquest of the county was effected.

Tree names play a prominent part in our nomenclature.

The *Ash* gives us Ashburton, Ashbury, Ashcombe, Ashford, Ashprington, Ashreigny, Ashton, Ashwater, and probably Roseash, though there and in Ashwater *uisg* may be concealed.

From the *oak* we have Egg Buckland, Dunchideock, Eggesford, Hacombe, Hemyock, Hockworthy, Hennock, and perhaps Ugborough, Okeford, and Ogwell (?), though certainly not Okehampton.

The *birch* appears in Bickington (2), Bickleigh (2), Bicton and Bigbury.

The *beech* is probably found in Buckerill and Bucks Mill, doubtfully in Buckfastleigh; but I do not think it has place in either of our eight Bucklands. *Bocland*, land held by charter, is at once the simplest and the most intelligible etymology. Verstegan, however, makes bocland equivalent to beechland.

Withycombe, and perhaps Widdecombe, may be named from *withy*, or, again, may simply express width. *Aller* = "alder," is a place-name of tolerably frequent occurrence. Dodbrook *may* belong to this class; but see under personal names.

Heavytrees, Langtree, and Plymtree have been regarded as preserving the Kornu *tre*, "a place," analogous to *tun*. This is clearly an error. The Kornu *tre* is *never* used as a suffix; and we have here simply "Heavy tree,* "Long tree," and "Plum tree," the Saxon *treow*. There is nothing remarkable in a place being named after some particular tree. Appledore, which occurs more than once in the county, is *æppuldre*, Saxon for "apple tree," and not *an-pul-dwr*, Kornu for "the water-pool," as that near Bideford may very plausibly be rendered. Rattery is probably a name of the same class;

* Perhaps, as Mr. Davidson thinks, the "*Hive tree*." *Trans. Dev. Ass.*, vol. viii. p. 400.

and of miscellaneous trees we have Holne, *holly*, and Chevithorne and Thornbury, &c.

Names denoting collections of trees occur so frequently as to show that Keltic and Saxon Devon must have been a well-wooded country.

Wood itself is found in Broadwoodkelly, Broadwoodwidge, Cornwood, Dalwood, St. Giles-in-the-Wood, Horwood, Marwood, Woodbury, Woodland, and Woodleigh.

Holt, a "coppice," is seen in Chittlehamholt.

Sceacga, "rough coppice," occurs in Chagford (Brushford has very nearly the same meaning), Shobrooke, Huntshaw, Meshaw, and Shaugh; and *spinney*, an allied word, is found in Sampford Spiney. *Hurst* and *dingle* are rare with us, and not found in our parish names.

But the most noteworthy word in this connection is the constantly-recurring *beer*, which is found in the varying forms *bera*, *berah*, *beer*, *bear*, and *bere*. It enters into the names of only seven parishes, Aylesbeare, Beer (East Devon), Beer Ferrers, Kentisbeare, Loxbere, Rockbeare, and Shebbear; but it is found in at least eighty other instances in every part of the county. Mr. Taylor* treats it as identical with the Danish test word *by*, which would make Devon rather more Danish than the counties of the Danelagh. It would not be difficult to show the historic baselessness of the suggestion. We could not believe, for example, that the Danes, when they found their way up the Tavy and ravaged Tavistock and its neighbourhood, were plundering their own colonies, at Beer-alston and other places in the neighbourhood; or that after the raid they would have been suffered to leave such colonies behind them; and yet if Beer was ever a *by*, one of the horns of this dilemma must be accepted. Elaborate argument is not, however, needed. The word is plainly the Saxon *beera*, "a grove," and its abundance is another indication of the aspect of Devonshire in those distant days. The only *by* I know is Huckaby, in Lydford.

Stone, which may in some cases, where the prefix ends in *s*, be confounded with *tun*, gives us Bradstone, Belstone, Chivelstone, Knowstone, Lymphstone, Thurlstone, and Whitstone; and in another adaptation Stonehouse.

Wash, a "marsh," is seen in Sheepwash, Washfield, and Washford Pyne. *Fen* Ottery and *Feniton* have the same meaning.

Heath occurs in St. Giles-in-the-Heath and Hatherleigh.

* *Names and Places*, pp. 164, 187.

Down is found in Down (East, West, and St. Mary), Dowland, Lew Down, and Roosdown.

Our last group contains names of which the main feature is the manner in which they are distinguished by means of adjectival or personal prefixes and suffixes. Here we class the names which indicate relationship and possession.

The points of the compass are used to distinguish places of the same name from each other in the list under review in nearly forty instances. Thus we have *East* and *West* Alvington, and *North* and *South* Molton, and their fellows, while occasionally we find East, West, North, or South, used without its correspondent.

High and *higher* frequently occur; as in Highbury, Highhampton, Highweek, Harford, Horrabridge (*hearu*, Saxon "higher"). Hoe, or Hooe, an older form, is found both by itself, and as a suffix; e.g. Morthoe, "the highland of Mort."

Up appears in such names as Uploman, Uplyme, and Upottery.

Down, as in East and West Down, and Lew Down, however, comes from *dun*, and belongs to the previous group.

Distinctions of size appear in *Great* and *Little* Torrington.

Of age, in the six *Newtons*, the *Newport*, and probably in *Oldridge*, with many other instances outside the parishes.

Colour we find in *Whitstone* and *Whitchurch*.

Blackawton, Blackborough, and Black Torrington may derive from *bleak*; while if a Norse origin could be established we should have to regard black as white, for the latter is the meaning of *blakka*.

But the most frequent distinction of quality is the use of the prefix *broad*, which appears as Broad, Brad, Brat, and Brid, as in Broadclyst, Bradstone, Bratton Clovelly, and Bridford. Thirteen parishes are thus distinguished.

Widdecombe may be *wide-comb*, or *withy-comb*.

Charlton and Charlwood (Ashcombe) undoubtedly give us *ceorl*, a "husbandman."

The second class is a very large one, and includes over forty parishes, which still bear the name of their former owners, though, with one exception, the connection has ceased to exist. Thus, in addition to many manors which do not come within our present intention, we have parishes claiming the names of Raleigh, Gifford, Narbor, Cruwys, Pomeroy, Tracey, Speke, Brewer, Pyne, Fleming, Fitzpaine, Ferrers, Hidon, Burnell, Rogus, Trenchard, Damerel, Rowland, Courtenay, Peverell, Gabriel, Rivers, Foliott, Mohun, Helions, Reigney, Bushel. *Bishop* is the usual prefix identifying

episcopal properties, while that of *King* indicates Royal manors.

These however without exception are posterior to the Conquest. The personal names of Saxon date to be found among our parish names are very few: Alverdiscott (Alwards-cot), Brixton (Brictrics-ton), Dittisham (Didas-ham), Gittisham (Githas-ham), Topsham (Topas-ham?), Dunkerswell (Doduces-wille in *Domesday*), possibly Dodbrook and Doddiscombesleigh, Loddiswell, Wolfardisworthy (Wolfhards-worthy), and Wolborough (Ulfs-borough?). Dodda occurs as a personal name before the Conquest, and it may have originated from the water plant *dod*, which Verstegan says in his time was called by the boys "foxtail." It is more likely that Dodbrook came directly from the plant, than immediately from the personal form, Dodda.

An important and numerous sub-class contains the names which show connection with the church, the prefix or suffix of Abbot, Bishop, Monk, or Prior, being the most usual, and the later form. Abbots have given a distinguishing title to five parishes; Bishops to the same number; Monks to the same; while Priors have to be content with two. The possessions of these dignitaries are commonly opposed to those of the king; and monk-ownership also appears in the Latin form in Buckland and Zeal Monachorum. Thirty-one (thirty-three if Crediton and Ide are reckoned) parishes are distinguished by the names of the saints to whom they were dedicated; in two appears *minster*; in one *temple*; and in seven *church*. Thus we have

Abbots Bickington, *Abbotsham*, Abbots Kerswell, Milton Abbot, and Newton Abbot.

Bishops Nympton, Bishops Tawton, Bishops Teignton, Cheriton Bishop, and Morchard Bishop.

Dean Prior and Shaugh Prior.

Buckland Monachorum, *Monkleigh*, Monkeokehampton, *Monkton*, and Zeal Monachorum.

Buckland-tout-Saints, St. Budeaux, *Christow*, Clyst St. George, Clyst St. Laurence, Clyst St. Mary, Collaton St. Mary, Down St. Mary, St. Giles-in-the-Heath, St. Giles-in-the-Wood, *Germansweek*, St. Thomas, *Instow* (Johns-stow), *Jacobstow*, *Mariansleigh*, Marychurch, Mary Tavy, Newton St. Cyres, Newton Petrock, Nymett St. George, Ottery St. Mary, *Pancrasweek*, Peters Marland, Peter Tavy, *Petrockstow*, Plympton St. Mary, Plympton Maurice (also Erle), Tedburn St. Mary, and *Virginstow*.

Azminster and *Exminster*.

Templeton,

Church Stanton, *Churchstow*, *Churston*, Honeychurch, Marhamchurch, Marychurch, and Whitchurch.

The most important names here are those italicised, which clearly date back to Saxon, if not to Keltic times, and mark the places where, so far as names give any evidence, Christianity was first planted within this county. The existence of traces of the British church in Devon is established by Mr. Karslake in his paper read at the meeting of the Royal Archæological Society at Exeter, based upon the dedications to British saints still existing in Exeter (the parishes of which are not included in this list),* *The Celt and the Teuton in Exeter*; and in his *Traces of the Ancient Kingdom of Danmonia outside Cornwall*, read at the Cornish Congress of the British Archæological Association.†

Several names of Saxon origin remain to be noted which, where they do come within the preceding classes, have yet some distinctive peculiarity which calls for remark. The Nymett parishes are among the most important. Mr. Taylor defines *nymett* as "a sacred grove;" Mr. R. J. King, in his presidential address at Torrington,‡ held it to indicate an enclosure, what is now known on Dartmoor as an "intake," and argued so conclusively that we must regard Bishops Nympton, Nymett Tracey, George Nympton, and Nymett Rowland, as marking sites where in Saxon times the process of individual enclosure and appropriation, at least in that district, had beginning. *Morchard* appears to be a word of kindred bearing. *Mor* is no doubt "moor," and *chard* I am inclined to derive from *scearn*, Saxon "cut off," which we see in *share*. We find no word of like meaning among the Keltic names yet in being. So, probably, in Sherford and Sherwell (compare *shire*).

The peculiar grouping of some of the place-names of Devonshire has already been marked. It applies purely to those of Saxon origin. The *tun*, the ordinary enclosure, is scattered all over the county, and can hardly be termed predominant anywhere, though perhaps less frequent in the north-west than in the south. The *stocks* are most commonly associated with our navigable rivers, then the great highways of marauders into the county, and needing to be furnished with rallying-places and strongholds. The three most notable marks of Saxon occupation are however to be found in the words *worthy*, *cot*, and *hay*; and these have a peculiar and distinctive distribution. *Worthy* is most common on the borders of Dartmoor, and particularly to the south and west; *cot* is almost peculiar to the west and north-west; *hay* has its

* *Archæological Journal*, vol. xxx.

† See *Journal*, vol. xxxiii.

‡ Already cited.

centre in the east. Of the three, *cot* is the most frequent, *hay* next in order, and *worthy* last. The special distribution of these words supplies some indication of the manner in which the Saxon settlement of Devon progressed. We may, as a rule, assume the *tun*, as the ordinary form of enclosure, to be the earliest, and *stock* to indicate a special need for defence. Upon *bury* we cannot place much reliance; for very large numbers of the camps to which the Saxon gave this name must have been formed and used by his predecessors. The idea of protection which is so prominent in *stock*, and which we recognise in a lesser degree in *tun*, appears in *worthy* in a still more modified sense. It is an enclosure indeed, but with another object; and although the authorities cited by Camden vary between a "court, place, fort, isle, possession, and farm," we may fairly conclude that in Devonshire the word assumes rather the latter position. Most of the *worthys* in all probability date subsequently to the expulsion of the Britons, and were farm places, with enclosures to protect the cattle and sheep and hogs from the ravages of the wild beasts. The fact that Dartmoor was the chief stronghold of the wolf in the county will account for the frequency of the *worth* or *weorthig* on its borders. And it is notable, too, that *worthys* not unfrequently bear names indicative of their owners—Gaudsworthy, Bixworthy, Ditsworthy, Troulsworthy, Ebbsworthy, Alfordsworthy, Colsworthy, Yadsworthy, and the like—a distinct proof of later origin.

Cot or *cote* almost explains itself. Everybody knows what a cottage is; and we may regard a cote as a little individual settlement among the wooded uplands, where some mud-walled (cob) thatched hut sheltered the squatting Saxon and his family, who picked up their living in the woods around as best they might, with the frequent aid of the pig, so dear to the cotter's heart even now. *Cots* are of less importance than *worthys*, but of much the same date. They are so far associated that in many cases we may regard the occupier of the worthy, and the occupier of the cot, as bearing much the same relation to each other as the modern farmer and labourer. The cots have among them not a few personal names. Alscot, Winscot, Gilscot, Hunscoth, Cudscott, Ellacott, Helscott, Coulscoth, Breinscot, Bruscot, Aylescot, Nescote, are probably of this class; and we find also such names as Upcott, Goodcot, Westcot, Northcot, Eastcot, Middlecot, Nethercot, Narracot, Widdacot, and what is peculiarly noteworthy, as an indication of the character of some of the occupants, *Smithacott*, and *Herdacott*. *Prestacott*, which is of frequent

occurrence here, has however nothing to do with priests; *pres* is a "common" or "meadow."

Hay, *hayes*, and *hayne* are words of a different class. They have nothing to do with residence, but answer very closely to a modern pasture-field. They indicate enclosures of pasture or meadow-land; and their prevalence in the east of the county seems to show that it was of a less wooded character at the time when agriculture took this step in advance. There is more variety in the prefixes of this class than in any other, and they seem to have been named very much in the same trivial manner as modern fields are, and as the *parcs* of Cornwall, which correspond to these Devonshire hays. As examples I may quote—Tuckenhay, Sparkhayne, Wadhayes, Sunhayes, Wishayes, Rockenhayes, Bluehayes, Culverhayes, Gladhayes, Axhayes, Courthays, Gittishayne, Shiphays, Streethayne, Twitchayne, Stanhays, Coombhayne, Jenishays, Woodhays, Garlandhaies, and Rockenhayne.

There are many name traces of the Northmen in Devon, though we have to reject Mr. Taylor's identification of *beer* with *by*. Mr. C. Spence Bate holds that the names on and around the Dart and its branches "demonstrate that at a very early date a horde of Scandinavian adventurers forced their way up the Dart, and perhaps the Teign also, and occupied the tin stream works at the head of the Eastern Dart and Teign."

If we eliminate from the argument the names that are capable of Saxon etymology, this appears too wide a deduction. For example, Thurlstone is simply the *thirled* (or "pierced") *rock*. From its singular natural arch then, and not from Thor, did Thurlstone parish take its name; and there is no reason to assign any other origin to Thurlstone Tor—an equivalent of the Kornu *tol-maen*. As to Thruskelton, which Mr. Taylor says is of the Icelandic type, "denoting the *tun*, or enclosure, round the skaaler or wooden booths, which were usually erected at some little distance from the Thingveller,"* it is really sufficient answer to point out that Thruskelton stands on the *Thrustle* river, a name which appears of the same class as the *Rattle* brook. That there are however names of Norse type and origin in Devon is certain. We have *beck* in Becky river; *gyll*, a "ravine," in Fingle Bridge; *force*, a "waterfall," as in Humber Forces, to which Mr. Spence Bate directs attention, or Forches in Lapford. *Shiel*, a "shieling," a distinctly northern form for a

* *Names and Places*, p. 313.

shed, is of frequent occurrence; and all along the south coast the characteristic *ness* for promontory appears. These are traces unmistakable of Norse influence in the county, and of the settlement herein at least of some of Scandinavian race. Nor is the occurrence of the name "Sewer" in the neighbourhood of the Bolt, to which Mr. King refers in the address already cited, without considerable weight. The suggestion for which we are indebted to him, that in Sewer we may recognize *sea-ware*, "sea-folk," points distinctly to the settlement of Norsemen. Mr. Taylor refers Satterleigh to the god Sætere, and Wembury to Woden. It is singular that in both these names we should indeed have evidence of the Scandinavian, but in quite a different direction. While we have so good a Norse etymology as *seter*, "a dwelling, or seat," for the former, there is no need to go further afield; and as for Wembury, instead of implying "the existence of a mound or other erection dedicated to Woden,"* it is one of our most interesting and valuable historical links. The oldest form of Wembury is Wicanbeorge. *Beorge*, of course, is "bury," and *Wican* is *wiceng*, or "viking." Here then we have "the Norsemen's earthwork," a distinct proof yet subsisting of the truth of the tradition that it was at Wembury, Ceorl, ealdorman of Devon, defeated the Danes, in 851. And Revelstoke bears out this view if we may derive *revel* from *reafere*, a "rover, robber." *Reafful* = "rapacious."

I hesitate to cite Totnes in this connection. It may be Keltic, or Saxon, or Norse, or neither, though it certainly is not the French *tout l'aise*! Mr. Bate makes it the "village under the hill," and quotes the existence of a Totnais near Stockholm. Others have made it the "rocky town." But the chief thing to be noted is that the name first appears as that of a coast line, "the Totnes shore," and not of a town. It is quite possible that Totnes, the town, may have nothing to do with the *Totonesium litus*. Clearly it is not at the present Totnes we are to seek the origin of the name. A Saxon derivation that would fit Totnes *town* quite as well as any other would be from *Tot*, an "enclosure," and *ey*, an "island"—Tot-an-ey—allied to Tottenham, and associated with the island by the bridge, one of the Dart's most notable features. The original Totnes, I am half inclined to regard as of Keltic origin, and neither more nor less than an old name for this part of Britain. Perhaps instead of *ness*, a "headland," we should read *enys*, an "island"; and *Tot* may

* *Names and Places*, p. 341.

be equivalent to the *Dod* or *Dodi*, which we have in the *Dod* of the well-known Cornish headland, the *Dodman*, and which there is interpreted, "mark or position," *i.e.* *dodmaen* = "the prominent stone, or rock." Thus we may read *Totenys* the "projecting or prominent island," a name by no means inapplicable to this western peninsula.

With names of Roman origin I do not intend on the present occasion to deal. They are mostly confined to the use of *chester*; as in *Exchester*, *Exanceaster*, *Excester*, *Exeter*, and to words which indicate association with some of the ancient roads. Names of the latter class are by no means uncommon. We have *Orway*, *Oldaway*, *Farway*, *Solway*, *Oxenway*, *Shurway*, *Broadway*, *Whiteway*, *Northway*, *Elverway*, *Reddaway*, *Greenway*, *Ridgeway*, *Helway*, *Holloway*; *Harepath*, *Sticklepath*, *Gappath*; *Colridge* (?), *Bromridge*, *Dorridge*, *Cutridge*, *Oldridge*, *Horridge*, *Cherridge*, *Stoldridge*, *Stouridge*; *True Street*, *Hare Street*, *Dark Street*, *Bow Street*, &c. *Ford* in some instances may also be held to mean a road, retaining its original wide use. Most of the road-names give us little clue to the origin of the trackways which they designate; but the *streets* are commonly held to be of Roman descent; and some at least of the ridges indicate a road raised and dyked like the *Fosseway*. *Sticklepath* is from the Saxon *stigel*, "steep." *Twitchen*, which occurs as the name of a parish and elsewhere, means "the two ways"; *i.e.*, a place situated where a road forks. *Cold Harbour* (= shelter), generally held to indicate the neighbourhood of a Roman road, occurs more than once.

Before turning to the Keltic section of our nomenclature, we may pass a few miscellaneous Saxon names more closely under review: *Atherington* may give us *heath*, "heather," as in *Hatherleigh*. *Barnstaple* is one of the very few words which have any connection with trade; for *staple* meant originally a settled mart, or market. The greater *Torrington* has a more distinctive title in its form of *Chipping Torrington*, precisely equivalent to the use of the prefix "market," as seen in *Market Bosworth*; and *port*, as in *Newport*, means originally "an enclosed place for sale and purchase—a market." * *Bradinch* is *Bradnese* in *Domesday*; but the second syllable is hardly the Norse *ness*. *Bridgerule* has been identified as *Raoul's Bridge*, which is possible. *Muckford* (*Bishops Nympton*) needs no comment. *Brixton*, *Domesday* reveals to be a name of ownership, for it there appears as *Bristrichestone*, "*Brictrics-tun*." *Wobblewall* in this parish should be the

* *Kemble's Saxons*, vol ii. p. 550.

"bubbling well"—*wabble*, to "burst out, bubble," and *wall*, "well." The *hem* in Hembury, Broadhembury, Hemyock, &c., is probably the Saxon word for boundary, and gives these places a frontier character. Staffordbeer in Broadwoodkelly should be Stowford. Calverleigh appears to embody *culver*, a "pigeon," which occurs in a prefix to certain hayes. The names of animals do not however fill a prominent place in our local nomenclature. Brockscombe, in Bratton Clovelly, is of course the badgers-combe (*brock* is still used for badger). I do not know whether *Wolfs*grove in Bishops Teignton is an old name or not. Swincombe, which occurs more than once, should be *Swinecombe*. In Chawleigh (*shaw*) we have Leaches. May this not be the Saxon *lecehus*, "an inn"? In Clayhanger we have the Saxon *clay* and Norse *hangr*, a "mound." Clovelly, like the *cleaves* on Dartmoor, comes from the Saxon *cleafan*, whence cliff = the "cliff place." Colebrook seems to embody *coln*, a "pebble," Saxon. *Coll* is Kornu for hazel; but we have the "pebbly ford" in Newton Poppleford. Dalwood—*dael*, a part, or *dale*. Tigley in Dartington—*tig*, a "tile" = "tilefield," a name of the same class as our modern brickfields, and interesting as marking the site of a Saxon pottery. Drewsteignton is commonly rendered, since the Druidic hypothesis was abandoned, "Drogos," or "Drewes-Teign-tun;" but it is possible that the first syllable is from the Kornu *deru*, an oak. Frithelstock can hardly be derived from any other root than the Saxon *frith*, "peace." *Frith-stow* would be a "peace-place; and though a *stock* does not savour much of anything so amicable, still it may have been the site of a treaty. Sigford in Il-sington has a double etymology, between which I cannot undertake to decide—*sige*, "victory," *sich*, "dry" (Kornu); I incline to the latter. The original form of Ilfracombe is Ilfordcombe, which should tell its own story. Lapford, from *lappa*, a "boundary." Here is a place bearing the suggestive name of Saxons. Loxbeare and Loxhore; query *locig*, an "enclosure." Malborough seems to be connected with Marl-don and Modbury, also with Motion, near Exeter. *Mal* is "a spot or place of meeting;" *mot*, a "meeting;" *motern*, a "meeting place." If these derivations are correct, places so named must once have been of some importance. Marwood (Merehode in *Domesday*), *mere*, a "lake," as in Cranmere = "the Cranes lake" on Dartmoor. Oreston in Plymstock—the "tun on the shore;" *ora*, "the shore," or the "shore stone." *Port* appears in several names, but not to all appearance derived from the Kornu *porth*, a "harbour." In Portle-

mouth we have the word in its sense of harbour; in Newport, of a market-place; and in Portgate, in Stowford, an apparent reduplication. Rackenford, query *racu*, a "flood." Rewe, query *hraew*, a "corpse." Lammacraft in Stokenham = *lam*, loam, and *croft*, a "small enclosure." Grenofen, near Tavistock = *green-ofen*, "green margin" (?). Lessland (South Tawton), *leswe*, a "pasture." Sindercombe, in Twitchen, in some localities might fairly be supposed to derive its name from the scoria of ancient furnaces. Essabeer (Witheridge and elsewhere) = "ash grove." Kingsbridge, the "King's burgh" (Mr. Dymond's identification really admits of no question). In Kingswear the second syllable cannot be what is now understood by "weir," and the first is doubtfully "kings" in the modern sense. *Cant-ware* would be "dwellers by the headland." In Warfleet, on the other side of the Dart, nearer the river's mouth, we have without doubt *weir* as it is commonly understood, so that Warfleet means the "dammed stream."

I now come to the names of Keltic origin, which are of singular interest and importance in their bearing upon the present enquiry. They are far more numerous than is commonly supposed, and embrace examples of the whole of the words in the well-known rhyme of Camden:

"By Tre Ros Pol Lan Caer and Pen
You may know the most Cornish men."

Excluding very doubtful instances and compounds of Keltic river words, the parish names yield us the following examples:

Abbots and Kings *Kerswells*—*caer*, a "camp."

Brendon—*brae*, a "hill," and *dun*, a "hill," reduplication.

Broadwoodkelly—*celli*, a "grove."

Broadwoodwidge—*gwic hir*, "long village," or *wicca*, "a village."

Budleigh—*bod lle*, "house place," though *bod* may be *botle* (Saxon), "a house," and *leigh*, "lea."

Butterleigh may be analogous.

Cadbury—*coed*, "wood;" less probably *cad*, "battle."

Cadeleigh—*coed*.

Challacombe is given by Prince, "valley of jaw bones;" but 'shallow combe' is much more likely.

Chevithorne may include *chy* (Kornu), "house," but this is doubtful.

Chittlehampton—*chy tol*, "house by hole;" Chaddle is probably associated with this.

Chittlehamholt. (See preceding.)

Clannaborough—*llan* (?), "an enclosure."

Cockington—*coch*, “red.” Cockington = “the enclosure of the red meadow.”

Coffinswell—*coch* (?).

Cookbury—*coch*.

Countisbury.—We seem to have here the word *ceann*, *cant*, “a headland,” which gave name to Kent, and which occurs also elsewhere in the county; *i.e.* at Kinterbury, near St. Budeaux, and Kentisbury—other forms of Countisbury and Canterbury—and at Kentisbeare. Hence too, probably, the origin of the name “Kent’s Hole,” the “hole or cave in the headland,” which we thus trace back to Keltic times.

Goodleigh—*coed*, a “wood.”

Hennock—*hen*, “old.”

Highbray—*brae*, a “hill.”

Ipplepen—*pen*, a “head.”

Kelly—*celli*, a “grove.”

Kenn—*cein*, a “ridge;” or see Countisbury.

Landcross—*llan cras*, the “place of the cross.” *Llan* may also occur in Landkey, Landscope, and Lamerton.

Membury—*maen*, a “stone.”

Manaton—*maen-y-dun*, “the stony hill.”

Parkham and Parracombe—*parc*, an “enclosure,” field.

Paignton—*pen*, a “head.”

Pennycross—*pen-y-craes*, “head of the cross.”

Poltimore—*pol-ty-maur*, the “house by the great pool.”

Powderham—*pol-dur*, the “water pool.” (The *Domesday* form is *Poldre*). *Ham* (Saxon), “dwelling,” affixed. This seems more probable than the derivation from the Saxon *æpuldre*, “apple-tree,” which has been handed down elsewhere unmutated.

Ringmore—*rhyn-maur*, the “great promontory.” This was probably the Keltic name for the promontorial district from the Bolt Tail to the Start—now restricted to the parish.

Roosdown—*ros*, a “heath,” reduplicative.

Roseash—*ros*.

Stockland—Possibly *stock* and *llan*, reduplicative.

Townstall (Dunstal in *Domesday*)—*dun*, a “hill,” or *dinas*, a “camp,” and the Saxon *stow*.

Whimple—*guimp-pol*, “pool on the descent” (Pryce), or *gwyn-pol*, “white pool.”

Winkleigh—*winnic*, a “marsh.”

To this list should be added the parishes with Keltic dedications, where these are indicated in the names. Mr. Karslake enumerates Romansleigh (St. Rumon), St. Budock; St. Kerrian, St. Paul, St. Pancras—Exeter; St. Brannock, which he traces through Brannockstow to Braunton, and thence to the Barum and Barn of Barnstaple; St. Bran-

wallader (Branscombe), St. Ida (Ide, and Iddesleigh ?), St. Creed (Crediton).*

A general examination of the place-names of the county has revealed, especially in the names of farms, hamlets, and the like, a very large number of unquestionable Keltic names scattered over the whole county; but more numerous in the south and south-east than in the east and north, and least so in the west. There is no such gradual increase of Keltic names when we approach the Tamar westward as Dr. Freeman has assumed.† Killeton, *celli*, a "grove," occurs in East Alvington; and Kelly in Hennock; Commery or Combray, *cwm eru*, the "ploughed valley," or *cwm brae*, the "valley by the hill" (?) in Alphington and elsewhere; Pensford, *pen*, "head," Ashprington; Benstay, *pen*, Bampton; Pennymans, *pen-y-maen*, the "head stone," Belstone; Pillavin, *vyin*, "stones," Bishops Nympton; Tredown, *tre*, "a place, enclosure, corresponds to *tun*, Bow, Broadwoodwidge, Bradstone, and Hollacombe; Treland = *tre-llan* (?) South Brent; Goatam, *coed*, a "wood," Cadeley; Stinial, *stean*, "tin," Chagford; Bigadon, *bich-y-don*, "the little hill," Buckfastleigh; Sigdon, *sich-dun*, "dry hill," Charleton; Treble, *tre*, Cheriton Bishop; Pennyland, *pen-y-llan*, "head of the enclosure," Colebrooke; Paine-stone, *pen*, ditto; Dinnaton, Dinnacombe, Cornwood and Cornworthy, *dinas*, a "fortress;" Pennymon, *pen*, Cruwys Morchard; Ponsford, *pons*, a "bridge," Cullompton; Trenerry, *tre-an-eru*, "field enclosure," Dunkerswell; Pengillys, *pen-celli*, "head of the grove," Exminster; Penhill, *pen*, Fremington; Pencleave, "head of the cliff," Frithelstock; Rose Down, *ros*, heath; Trelick, *tre-linnic*, "the marshy enclosure," Hartland; Dennis Down, *dinas*, a "fortress," Hittisleigh; Karswell, *caer*, a "camp," Hockworthy, and so Holbeton; Trenicks, *tre-an-ick*, "place of the stream or ford," Ide; Pinnicombe, *pen-y-cwm*, "head of the valley," Kenn; Ponswine, *pons-vyin*, "stone bridge," Kingsteignton; Trevenn, *treven*, "dwellings," Lamerton; Pennycott, *pen*, Lapford; Goodameavy, *coed*, "wood," Meavy; Trehill, *tre*; Penquite, *pen-coed*, "head of the wood," Modbury; Cossick, *cos-gwic*, a "village by the wood," Moretonhampstead; Hannawins, *hannic-gwen*, "summerly meadow," Ben Twitchen, *pen*, South Molton; Trecombe, *tre-cwm*, "the place in the valley," Northleigh; Pinn, *pen*, Otterton; Goodrington, *coed-rhyn*, the "wooded headland," Paignton; Lana, *llan*, Pancrasweek; Venton, *fenton*, a "spring or well;" Goodamoor, *coed*, wood; Voss, *vos*, a "maid,"

* *Traces of the Ancient Kingdom of Danmonia.*

† *Norman Conquest*, vol. i. p. 33.

Plympton; Cremyll, *crim*, "crooked, bent," Stonehouse; Wixenford, *gwic-hen*, "old village," Plymstock; Goodshelter, *coed* (?); Prawle, *pral*, a "skull," Portlemouth; Penhay, *pen*, Poughill; Derriton, *derow*, an "oak;" Killatree, *celli*; Lana, *llan*; Villavin, *vil-a-vin*, by mutation for *mil-a-myin*, a "thousand stones," Pyworthy and Roborough; Trehill, *tre*, Sampford Courtenay and Tamerton Foliot; Dira, *derow*, an "oak," Sandford; Pennycott, *pen*, Shobrooke; Pinhill, *pen*, Sidbury; Penston, *pen*, Silvertown; Pen Recca, *pen*, Staverton; Pennyhill, *pen*, Stockland; Treleigh, *tre*, Sydenham Damerell; Cocktree, *coch*, "red," South Tawton; Lana, *llan*, Tetcott, perhaps *lanerch*, an "open place in woods;" Cocksilly, *coch*, "red," *selic*, "conspicuous," (?) Little Torrington; Craddock, *careg*, a "rock," (?) Uffculme; Gosses, *gosys*, "bloody," Wembworthy; Trayhill, *tre*, Westleigh; Hand and Pen, *pen*, Whimble; Pennycomequick, *pen-y-cwm-quick*, "head of the creek valley," Plymouth, Whitchurch; Mannamead, *maen*, "a stone," Plymouth; Venton, *fenton*, "well, spring," Widdecombe-in-the-Moor and Winkleigh; Mainstone, *maen*, "stone," reduplication, Honiton; Crocadon, *croc-y-dun*, "the barrow on the hill," Halwell; Crockham, "the dwelling by the barrow," Hennock; Knackersknowle (near Plymouth), *na-caer-cill*, "the hill camp," or *enoc-cair-coill*, "the grove camp" (Beal). This also occurs elsewhere, and is evidently Celtic, whether the Gaelic derivation be right or not. Pinhoe, near Exeter, *pen*, a "head," reduplication; the Saxon *hoe* for a high place is common. Goodstone, *coed*, "wood," Ashburton; Manaton, *maen-y-dun*, as the parish, near Plymouth.

Probably, too, of the mass of quaint local names which appear almost, if not quite, hopelessly corrupted, or rendered phonetically in meaningless Saxon, a large proportion date from the times of the Danmonii. Thus we have: Arson, Quoditch, Losses, Beaver (Axminster; can this be a trace of the animal of that name?), Slumbar, Tomhiding, Paws, Tuffland (this may refer to a stiff soil, such as is specially noted in Clayhanger and Clayhidon), Odam, Quince, Wolfsgrrove (Bishopsteignton; query from the animal), Wadstray, Fraunch, Lana Forda, Addle Hole, Whistlewell, Violets, Hare Pie, Profits Town, Truelove, Bargains, Heart Piece, Snooks, Kittle, Flares, Bason, Dural, Gingerland, Tineo, Venimile, Cartaway, Cappa Dulla, Little Joy, Paymiss, Butless Rill, Trumps, Yellow, Moxdrias ("Mucks-a-draaed!"), Queendart, Pelivan, Hurry, Heckapin, Leary, Affaland, Billets, Gollick, Horsavin, Crimpa, Gagland, Naishes, Puddavin, Garble, Tockley, Kates, Little Comfort, Farrants, Dandyland, Townliving, Homeliving,

Chatafin, Blue Ball, Pottles, Cornbrew, Tough, Brimstone, Delpsillock, Chipshop, Dagafot, Saxons, Rumage, Mountain Quaintance, Quiver, Cuckoo, and Doats.

Let us now briefly sum up our general conclusions as to the historic teachings of our Devonshire place-names.

They tell us not only that this county has been in turns inhabited by men of different races, but who and what these races were. The names of our larger rivers carry us back to the days of the elder Kelts, while those of others, by their differing character, prove not only that the dominion of the Kelts was long-continued, but that in turn Kelts of different tribes, with varying dialects, held sway here. The fragmentary vestiges of their ordinary nomenclature point to several important conclusions. The fact that these are scattered even yet, though often in very corrupt form, over the whole county, shows that Danmonia was a fully-peopled kingdom. It proves also that the Saxon colonization of the county was widespread. The survival of names in a forgotten tongue in a district from which the givers of those names have been expelled is a sure proof of some sort of continuity. Only on the supposition that the Kelt and Saxon dwelt side by side in Devon, for some lengthened period, can we explain this feature in our nomenclature. As a rule new settlers in a country are content to accept the place-names they find; and with few exceptions the Saxon names of Devon are either of places of Saxon origin, or of places the memory of the Keltic names of which had passed away with the Kelt himself. Thus, paradox as it may seem, it is just where we find Keltic names most common now that we may fairly assume the Saxon element to have been strongest before the Britons were driven across the Tamar. This was around Exeter and along the south coast, very much in the same localities where the actual presence of Roman names indicates that they too were once masters of the land.

Again, the relationship of Keltic and Saxon names proves, whilst the hundreds of camps and earthworks are material evidence that there was plenty of hard fighting before the county was finally won, that the earlier settlements were mainly of a peaceful character. The simple enclosure of the *tun* predominates largely over the more warlike *stock*, which is most frequently found, as already noted, by the side of rivers, where there was the greatest danger of predatory inroads from the sea; and the peaceful *ham* is scattered throughout the county. I do not include here the *worthy*, *cot*, and *hay*, which I take to be of later date, and rather to mark the

use and progress of agriculture. The old name of North Hams for the north of the county, and of South Hams still in use for the south, imply the non-settled character of Dartmoor at the period when they originated; the wild Moor divided the dwellers on the North from those on the South.

And so in the next place we find that there is no evidence whatever of a graduated Keltic element westward, which must be apparent if the Saxon expulsion of the Britons was not complete and final. The Saxon element in our nomenclature is quite as decided on the eastern bank of the Tamar as it is on the north coast; and the Keltic names in that locality are not a whit more plentiful than in some other parts of the county. The singular paucity, otherwise viewed, of Keltic names on Dartmoor, proves two things. First, that during British times Dartmoor was practically unknown to the Saxons. Second, that the Britons of Dartmoor were included in the general expulsion; and that there did not remain in that district, after the time of Athelstan, a race of Keltic miners, who subsequently fell into the position of serfs.*

And as the varying use of differing words for water enables us to trace successive waves of the Keltic race, so the singular localisation of special words for similar objects in various localities, and the casual occurrence of names of undoubted Norse origin, prove that the Teutonic occupation of Devon was of a mixed character, embracing members of the different tribes of the great northern peoples; and probably, from the same indications, in the outset very much of an individual nature.

We may have our doubts as to the extent to which traces of the elder mythology are to be found in our nomenclature, but if records were absolutely silent, we should know that at some period in their history at least both Britons and Saxons professed Christianity; and though we may regard the traces of a British Court of Judicature at Crockern as altogether mythical, we have proof that the Saxons at least had their regular places of assembly. Other names help us much to the understanding of the habits and polity of these times. There is not a single Keltic place-name left which includes the idea of personal ownership. In the earlier days of the Saxon immigration this is equally absent, but with the *worthy cot* and *ham* appears the personal element, which is continued in the *nymets* and the *chards*, until it finds settled expression

* This is suggested by Mr. Davidson. *Trans. Devon Ass.*, vol. ix. p. 200.

in the *boc* lands, to have its fullest rendering in the patronymical distinctions which followed on the Conquest.

And so we can form from this source a far better idea of the olden aspect of the county than any historian has preserved. We see the skirts of Dartmoor shrouded in coppice and undergrowth; woods, interspersed with clearings covering nearly the whole of the wide area, continued in the more open portions by frequent groves—woods in which the ash, and oak, and birch, and beech flourish, and the tenancy of which is disputed by the wolf and the boar; while the badger has his haunt, as now, in the rocky valleys, and the long-vanished beaver toils in the streams. Thus in like manner we can trace the lines of the chief trackways through these wilds by names which are still significant. All this and much more, without the aid of written history, do the place-names of Devon reveal.

THE JUSTICES OF THE PEACE FOR THE COUNTY OF DEVON UNDER CHARLES I. AND OLIVER CROMWELL.

BY A. H. A. HAMILTON, M.A.

(Read at Paignton, August, 1878.)

THIS paper will consist of little else but a list of names, and therefore can hardly claim to be of much general interest. Yet it may perhaps be thought not inconsistent with the objects of this Association to put on record in its *Transactions* the names of those families who took a part, nominally or actually, in the government of the County of Devon at the time of the Puritan Revolution. It may be interesting to many individuals to recognise the names of their ancestors among the Justices of that epoch. And it is not without historical interest to observe how very little the modern ideas of democracy entered into the great movement of the seventeenth century. It is evident that the sympathies of the leaders of the Long Parliament, and of Cromwell after them, were, on the whole, aristocratic, and that they were anxious to conciliate the support of as many of the old county families as possible. The Commissions of the Peace issued during this period seem to comprise the names of almost all the knights and esquires who were not known to be hostile to the revolutionary government.

We will take first a Commission of the quiet part of the reign of Charles I. The following is a list of the Justices of Devon in the year 1630. They are sixty-four in number.

The Earl of Bath
The Earl of Bedford
Viscount Chichester
Joseph Hall, Bishop of Exeter
Alexander St. John
Sir Edward Seymour

Sir Francis Vincent
Sir Peter Prideaux
Sir George Chudleigh
Sir Francis Drake
Sir Lewis Pollard
Sir John Pole

Sir Richard Grenville (Baronets)	John Acland
Sir Ferdinando Gorges	Arthur Champernowne
Sir Robert Killigrew	Elias Hele
Sir William Strode	William Cory
Sir Thomas Prideaux	Richard Waltham
Sir Thomas Drew	John Northcott
Sir George Southcot	William Bastard
Sir Edward Giles	John Wood
Sir Richard Edgecumbe	Henry Walrond
Sir John Speccot	Richard Reynell
Sir Francis Fulford	James Welsh
Sir Shilston Calmady	Thomas Risdon
Sir Samuel Rolle	John Davie
Sir Francis Glanvill	Walter Young
Sir Ralph Sidenham	Henry Ashford
Sir Edmund Fowel	Nicholas Fry
Sir Richard Reynell, of Ogwell	Nicholas Luttrell
Sir John Chichester, of Hall	Richard Cabell
Sir James Bagg	Bartholomew Berry
Sir Henry Rosewell	Humfrey Berry
Sir Simon Leach	Edmund Arscott
Sir Nicholas Martin (Knights)	Thomas Ford
Dr. Wm. Peterson, Dean of Exeter	Alexander Maynard
Dr. Thomas Clifford	Sampson Hele
Edwd. Cotton, Archdn. of Totnes	John Upton
John Bampfield	Humphry Pruz (Esquires).

The next list is of the year 1647, when power was in the hands of the Parliament, but was rapidly passing into those of the army. Still public business was carried on in the King's name, and the Commission professed to be issued by his authority, and to be dated from Westminster. It sounds like a bitter joke to represent the unfortunate sovereign as addressing his "dearest cousins" Northumberland, Manchester, and Say, and his "trusty and well-beloved" William Lenthall, Speaker of the House of Commons, and as appointing Edmund Prideaux *Custos Rotulorum*. The number of names in this Commission is seventy-nine; but, as ten of them are those of official personages, the number of local justices was only slightly increased. Perhaps the insertion of the names of officials may be taken as marking the centralising tendency of the Revolutionary Government. We also remark a diminution in the number of baronets and knights. Although those distinctions in the time of Charles I. did not by any means show that their recipients enjoyed the favour of the sovereign, it seems not unlikely that most of the gentlemen who bore those titles felt them-

selves bound to the Cavalier party, or at any rate were unwilling to act against the King from whom they had received the honour. The former Commission contains the names of eight baronets, and of twenty-one knights. The latter contains the names of five baronets, and of only seven knights. Some of these do not appear at all in the former Commission, and most of them were men like Sir Francis Drake, Sir John Bampffield, Sir John Northcote, Sir Samuel Rolle, and Sir Nicholas Martin, who, as we know from other sources, took an active part in opposition to the King. The other gentlemen included in the Commission for the most part bore the names of well-known Devonshire families; but we may remark the absence of those who, like the Pollards, the Aclands, and the Fulfords, had adhered to the King in his contest with the Parliament.

After the death of the King a Commission was issued in the names of the *Custodes Libertatis Angliæ*, and this was soon changed to "the Keepers of the Liberties of England, by Authority of Parliament," as the English language was then employed for the first time in such documents. We pass over these, and come to the Commission dated March 4th, 1653, and issued by "Oliver, Lord Protector of the Commonwealth of England, Scotland, and Ireland, and the dominions thereto belonging." It is in English, and contains seventy-four names, nearly the same number as usual. The first twelve are those of officials, the first of whom is "our trusty and well-beloved Bulstrode Whitelocke." Among them we notice the well-known names of Major-General Desborough, Francis Rous, Philip Skippon, William Lenthall, Oliver St. John, and John Bradshaw. No nobleman remains on the list, and only two baronets (Sir Francis Drake and Sir John Davy) and two knights (Sir Henry Rosewell and Sir John Young). The others, as Bampffield, Northcote, Fowell, and the rest, who had been opposed to absolute government when exercised by a King, were still more opposed to it when exercised by a brewer. Nevertheless, the Lord Protector seems to have avoided, as far as he could, placing any man of low birth on his Commission of the Peace. We look in vain for such names as Praise-god Barebone, or Bind-their-kings-in-chains, which are generally supposed, though erroneously, to be characteristic of the period. There are a few justices who may have been officers of the Revolutionary army, but most of them were evidently such members of old families as could be persuaded to serve under the Protector. It seems probable that, when the head of a house was a

"malignant," some of the junior branches were found to act in his place. At any rate, we recognize among "Oliver's justices" the familiar names of Rolle, Drake, Fortescue, Prideaux, Fowell, Wychalse, Carew, Calmady, Reynell, Quicke, Coplestone, Bampfield, Cruwys, and others which may be found in the Commission of Queen Victoria. It appears that those who accepted this dangerous honour were obliged "to sue out their pardons" at the Restoration, and no doubt to pay heavily for them. I have seen one of these pardons in the possession of John Quicke, Esq., of Newton St. Cyres. It is, unfortunately, almost entirely illegible, except the heading, which comprises a well-engraved portrait of Charles II.

COMMISSION OF THE PEACE FOR THE COUNTY OF DEVON,
DATED 26TH JULY, 1647.

In the name of Charles, and dated at Westminster.

To the Earl of Northumberland	William Fry
Earl of Kent	John Drake, of Ash
Earl of Pembroke and Mont-	John Maynard
gomery	George Chudleigh
Earl Say (<i>sic</i>)	Arthur Upton
Earl of Manchester	Ed. Arscott
Lord Roberts	Robert Savery
Wm. Lenthall	John Bury, of Bury
John Godbold (a Judge)	John Harris, of Hayne
Serjeant Wyld	Rob. Duke of Otterton
Henry Rolle (a Judge)	Thomas Reynell, of Ogwel
Sir Francis Drake	Josiah Calmady
Sir John Poole	Ed. Davyes
Sir John Bampfield	Eliseus Crimes
Sir John Northcott	Francis Rowse (<i>sic</i>)
Sir John Davy (Baronets)	John Waddon
Sir Walter Earle	John Rolle
Sir Samuel Rolle	Ed. Fowell
Sir Ed. Fowell	John Geare
Sir Gregory Norton	Peter Speccott
Sir Nicholas Martin	Henry Worth
Sir Henry Rosewell	John Fortescue, of Buckland
Sir John Young (Knights)	Thomas Hatch
Oliver St. John (Solicitor-Gen.)	John Woolacombe
Samuel Browne	Robert Shapcott
Ed. Prideaux	Christopher Martin, of Plimpton
Henry Walrond	Christopher Savery, of Shiston
Walter Young	Walter Yarde
John Bampfield	Hugh Trevillian
Hugh Fortescue	John Champnes

Peter Bevis	Wm. Bastard
Henry Henley	Wm. Putt
John Elford	Wm. Northcott
Arthur Perriman	Ric. Ducke
Thomas Drake	Henry Copleston
Roland Whiddon	Wm. Fowell
John Kelly	John Doddridge
Robert Rolle	John Tyrlinge
George Prestwood	Christopher Wood (?), of North
Wm. Morris	Tawton
John Quicke	

COMMISSION OF THE PEACE FOR THE COUNTY OF DEVON,
DATED MARCH 4TH, 1653.

Oliver, Lord Protector of the Commonwealth of England,
Scotland, and Ireland, and the Dominions thereto belonging,
To our trusty and well-beloved—

Bulstrode Whitelocke, Richard Keble, John Lisle, Lords Com-
missioners of the Great Seal of England; John Desborowe,
Francis Rouse, Philip Skippon, Esquires, of our Council; Henry
Rolle, Chief Justice, assigned to hold Pleas before us in the Upper
Bench; William Lenthall, Master of the Rolls; Oliver St. John,
Chief Justice of the Common Bench; John Glyn, Serjeant-at-Law;
John Bradshawe, Chief Justice of Chester; Edmond Prideaux,
our Attorney-General;

Sir Francis Drake	William Maurice
Sir John Davy (Baronets)	William Fowell
Sir Henry Rosewell	Joseph Hunkyn
Sir John Younge (Knights)	Shilston Calmady
Hugh Fortescue	John Elford
Robert Rolle	Thomas Boone
William Fry	Henry Hatsell
Arthur Upton	Edmond Fowell
John Drake	Henry Pollexfen
John Wollacombe	Christopher Martyn
John Champnes	John Carew
John Fortescue	Christopher Savery
John Arscott	Servington Savery
Edmond Prideaux, of Holsworthy	Henry Henly
John Bury, the younger	Anthony Rous
John Whitchalse	Arthur Penyman
Lionel Beecher	Christopher Wood
Robert Duke, of Otterton	William Bastard
Philip Dennis	John Beare
Arthur Fortescue	Thomas Reynell
James Eriscy	Rowland Whiddon

John Coplestone	John Tirling
John Quick	John Searle
John Row	Thomas Saunders
Richard Sweete	John Blundell
Thomas Drake	Richard Vicary
William Putt	John Hales
William Woolcombe	Edmund Arscott, of Tetcott
John Marshall	Robert Bennett
Thomas Bampfield	John Blackmore
Gideon Sheereman, of Neeston	Henry Crewes (Esquires)

EXTRACTS FROM A MEMORANDUM BOOK
BELONGING TO
THOMAS ROBERTS AND FAMILY,
OF STOCKLEIGH POMEROY. 1621 to 1644.

BY PAUL Q. KARKEEK.

(Read at Paignton, August, 1878.)

THIS book was discovered by Mr. Dunsford, author of the *History of Tiverton*, in the possession of a farmer in the parish of Stockleigh Pomeroy, near Crediton, and was given by him to Mr. Roberts, of Barnstaple, in 1800, from whom it descended to Mr. J. R. Chanter, of Fort Hill, Barnstaple, who has kindly lent it to me, with permission to make such extracts as I might consider interesting to the members of the Devonshire Association.

The book consists of forty-five leaves, size $5\frac{1}{4}$ inches by $7\frac{1}{2}$ inches. Probably some few of the leaves are missing; and the first and last pages show signs of having undergone a good deal of friction, in the course of which they have acquired dirt sufficient to make the writing almost illegible. Since then a rough binding has been put on, to keep the remaining leaves together, all of which are complete except the third, part of which has been cut off.

The Roberts family lived on a farm called Town Living, in the parish of Stockleigh Pomeroy, where they appear to have been well-to-do yeomen. They also held land as tenants, as will be seen by entries in the accounts of rents paid. Town Living is now the property of the Davie family, of Creedy, and is about one hundred and forty-two acres. Mr. William Tucker, who is the present tenant, tells me that his family have lived on the farm for three generations, and that he believes the size of the farm has been altered since the tithe map was made, so that it is quite impossible to form any idea of its size in the days of the Roberts.

The book appears to have been the common-place book of the family, as the entries have been made by different members, and by different generations, though most of them may be ascribed to Thomas Roberts, or Robert Roberts. Thomas Roberts held the important office of constable for many years, and must have been a man of trust and position in the parish. Roberts evidently had a weakness for law and legal proceedings. He has carefully recorded all acts of trespass on his ground, with the names of the witnesses; and most of the entries are unfortunately of this nature, or notices of payments made, items of accounts, receipts for treating cattle, &c. These are, for the most part, quite without interest; but scattered among them in a very irregular manner, and quite irrespective of date, are records of such public events as came under the writer's notice, and entries which throw light on the manner of life in Devon in the days of James I. and Charles I.

It seems probable that Robert Roberts was not popular in the neighbourhood. He was too fond of recording acts of trespass and other little misdeeds of his fellows, with a view to such being useful against them; and sometimes this dislike showed itself in something worse than hard words, as the following entry testifies:

1625 The xxx th day of Nowember being Saynt Andrew's day John Gib the younger came to mee in John Vesies meddow and came and grit me 2 or 3 times then he stroke mee and his father rann to mee and catcht me about the nek and did draw me at the ground. So the ould Gib and his sunn and his man were att me all at the one time and did beat mee

Witnesseth James Gore the younger, Richard Venner, William Smith and many others.

There was evidently a family feud between the Roberts and the Gibs, and which was kept warm for some months. Roberts records that Master Gib endeavoured to have him arrested, and procured a warrant for that purpose. Failing that, Roberts had a turn, and Gib was locked up. Then again Roberts writes:

The xj day of Aprill payed unto John Morrell for the arresting of mee viijd, and that is 4p for the bayle band and 4p for the arresting.

Perhaps Roberts was in the wrong, and wanted to make up the quarrel; for evidently there must have been several

outlays of fourpence in getting one another arrested and bailed out, and consequently we find the following entry :

1626. The xxijth day of April I Robert Roberts did proffer John Gibbe the elder what wrong or what trespass the sayde Robert Roberts had dun him he was willing to give him or make him satesfacyon and was contented to put the matter unto any man and was contented to byde there warde and did tender him down 4s that he should give him self content for what wrong or trespass I had donne him. This 4s was layed downe upon the Ester gate of the Church yarde at Cheryton Fits Spayne

Witnesseth Andrew Huse, and Richard Beare of Charaton Fit Spayne.*

There are many entries respecting this quarrel, but nothing to show how it ended. The handwriting is very different in the first entry given from that of the 23rd of April; but then one could hardly be expected to write one's best soon after being knocked about by old Gib, and young Gib, and their man.

The church in those days seems to have been used for other purposes than that of divine worship; and a good deal of the public life of a peasant took place in and about the church. In this instance the money being laid down on the east gate was evidently tantamount to a legal offer of payment. Other extracts in support of this view will be given.

Roberts appears to have lost no opportunity of adding to his stock of legal knowledge, and has inserted in his book particulars of the modes of framing bills of indictment, obtaining warrants, and attending the assizes. The following copy of a certificate for a casual pauper of the period shows the mode of treatment used in those days to get rid of such gentry :

A pass to send houm vagarrants from tithing to tithing.
Devon—

Giles Roles a vaggarant Begger was the fourth day of february Anno Dom 1632 was openly whipped in upton hellings within the county aforesayde for a wandering Roge according to the lawe and is assigned too pass forthwith from Psh to Psh the next stright way too Ashton within the county of Heryford where as hee confesseth hee [was borne] dwelleth and had his last abod for three years and is limited to bee there within twelve dayes where hee is to bee delivered to the Churchwarden and overseere of the poore of the sayd Psh there by them to bee set on worke and provided for as law biddeth.

* Cheriton Fitzpaine, near Crediton.

In witness whereof Richard Reynell Esquire one of his Ma^{ties} Justices of the peace within the sayde county of Devon Thomas Whitehorne parson of the sayd Psh of Upton Hellions and Simo Dicker Counstable there have here unto set their hands and seals.

Given the day and yeare first above written

Richard Reynell * Thomas Whithorne Simon Dicker.

It would appear that the number of beggars and loose characters must have been on the increase, and in order to keep them under, the above-mentioned stringent measures were adopted. Izacke's *History of Exeter* contains the following quaint notice of the city's efforts in the same direction: "No common beggars in the open streets of the city were permitted, but presently sent to the Workhouse, or House of Correction, to get their bread by the sweat of their brows, Idleness being the root of all evil; it being no less true than a witty Saying, That the Devil tempts all men but the Idle man, who tempts the Devil, the Idle Man's Brain being a Shop for the Devil to work in."

King James I. died on March 27th, 1625, and within a month Charles I. issued warrants for the election of members for his first Parliament. Roberts thus alludes to the elections for the county of Devon. His attending to vote seems to imply that he was an owner of freehold land.

1625 The xxvj day of Aprel were chosen at the Castel of Exeter to be Knights of the Sheere for the Parlament Ser Frances Fulford,† Ser Frances Courtney.‡ They were chousen at the comming in of our Gratius King Charrels.

Simon Lech§ of Cadley was Head Sherrieve this yeere. The names of those that bee of our Psh that were to the chousing of the Sheere Knights were Thomas Roberts, Peeter Smart, Peeter Pine, Richard Jewell and John Dart.

Charles was not long on the throne before he was entangled in the war on the Continent. His sister's husband, the Count Palatine, had lost his hereditary dominions, and Charles, aided by the French and Dutch, endeavoured to reinstate him, the Emperor and the Spanish King taking the other view of the question. Roberts thus alludes to the Cadiz expedition:

At Ester and Whitsuntide there were three preesses in England.

* Richard Reynell, Esq., of Creedy-Widger, in the parish of Upton Hellions.—Westcote, p. 578. † Sir Francis Fulford, of Fulford.

‡ Sir Francis Courtney, of Powderham.

§ Sir Simon Leach, of Crediton and Cadleigh. Knighted 1625.

At the third pres there were at Plimmoth that did take Shipping there about 10 thousand men: that is a camp Riall. Then it was spoken of that there were 2 camps Riall that went out of King Charrels Dominion 1625.

Of the twenty thousand men here mentioned, eight thousand assembled at Plymouth, supplemented by two thousand veterans from the Low Countries, while two thousand freshly-pressed men were sent from Hull to fill their places in Count Mansfield's army. The second ten thousand were collected from the seaport towns to man the navy; of these part went to Dieppe to join the French fleet, and the remainder joined in the Cadiz expedition organized at Plymouth. There were many difficulties in starting this expedition to Cadiz, and Charles paid his first visit to Devon to hurry on the preparations. Roberts notes the visit of the King as follows:

The 13 day of September Mr. Sherrife roud at powdroum to meet King Charrels there and from that they roude at Plimmeth to see the goin away of the fleet, and there roud with Mr. Sherrief many of his men.

The 12 day of October the fleets went away from Plimmeth When that King Charrels was there at Plimmeth there were thirty thousand that trayne before his Majesty: There were seven score scale went away together.

Roberts here records the country-side rumour of the proportions of this expedition. Rushworth gives the number of ships as eighty, and the number of men 15,729, of whom barely 10,000 were soldiers, and the remainder sailors. The command was given to Lord Wimbledon; but the whole affair was conducted Stuart-fashion, and turned out a miserable failure.

The day the fleet left Plymouth it encountered a violent storm, which did great damage, and scattered the ships for a time. It was probably a wave of the same storm whose visitation to Tiverton and neighbourhood Roberts thus describes:

The 13 day of October there was a storm and a fearefull water in our country and it was very credabell reported that there were 50:3 (53) houses in Tiverton sunk and caryed away and in Upex there was great hurt dun at the report of 3 hundred pounds. Mr Kingdoms houses weare all caryed away except his barne. Thomas Richards houses were very mutch hurted. The widdow Rakes her houses and R Ducks and in other places there was mutch hurt dun.

The rustic's notion of the size of London at this time may be seen by the following memorandum. It must have appeared colossal to a Devonshire yeoman of the seventeenth century.

The 2 day of October I heard it spoken of in Sir Simon Leaches house that there be cxx and od Pshes within the suburbs of London, that is within the walls and the walls are 12 miles about.

About this time the plague was causing a terrible mortality all over England. In 1625 it was so bad in London that the Revenue Offices were removed to Reading, and the Parliament was adjourned from Westminster to meet again at Oxford. In 1626 it was considered unsafe to hold the assizes in Exeter, and the town of Tiverton was chosen instead. Roberts thus alludes to the event:

1626 The assizes was kept at Tiverton. The Head Sherife of Devonshire at that time was one Master Fry.* The Judge was called Judge Dennem.†

Dunsford, quoting from Blundell's and Hewett's *Memoirs*, says that the school (Blundell's School) was used as the assize court, and that "a Dutchman for robbery, and one Comins of Chevithorne for sheep stealing, were hanged upon the White-down, about two miles from Tiverton, leading to Cullumpton."

1626 (1627) Head Sherrife for Devonshire Master John Northcote ‡

1628 Mr Young § of Upton Hellings was Head Sherife of Devonsheere

One subsidy for our Psh comes to iiij^l xij^s

The vj day of September payed unto Baptes Tukes too subsidies except eight shillings that was dew from George Matthew

In the year 1628 the Commons voted five subsidies to the King, but only after a great deal of discussion and grumbling.

* Nicholas Fry, of Yarty.

† Sir John Denham, Baron of Exchequer 1617-34, one of the few upright judges of Charles I. He gave his judgment in favour of Hampden in the Ship-money trial.

‡ John Northcote, of Yewtor, ancestor of the present Chancellor of the Exchequer.

§ Walter Yonge, J.P. for Devon, member of the Puritan party. One of the first two members of Parliament returned for Honiton on the restoration of the franchise to that town in 1640. See *Diary* published by Camden Society.

The objection to paying taxes was not confined to London. Roberts, as constable, and consequently collector of rates and taxes, would naturally hear the usual comments made on such occasions; and it would appear, from the following entry, that the notice for payment of a subsidy was made in church, when most of the parishioners would be assembled. With truly official zeal Roberts notes down the openly-pronounced growl made on so public an occasion.

The 24 day of August Peeter Pine said when the subsidy was spoken of in the Church by Thomas Roberts, whether it should be paid in post and that men could not pay money before they had it.

What *in post* may mean it would be difficult to say; but evidently it was something rebellious and treasonable, or the worthy constable would not have made a note of it. For a much less trivial remark Master Peeter Pine might have drawn on himself the attention of the Star Chamber.

The next entry of public interest is that of the murder of the Duke of Buckingham, by Felton, at Portsmouth.

The Duke was slain in August 1628. He was slain in Portsmouth by one John Felton a souldier. John Felton was executed the xxix day of December.

Peeter Pine, who grumbled about the subsidy, gave Constable Roberts trouble again, by making what it is to be hoped were libellous assertions against that functionary's official character.

The 9 day of Desember Peeter Pine saide that I did keepe il order and that I did goe at John Pleases his house and require for beere when it was midnight and because that I could have none there I went at Thomas Parrases house and there I called for beere to make them drunke that were drunk before.

Witnesseth Mary Roberts.

The constable's property was not safer than his good name, if we may judge by the following entry:

The 12 day of Desember one Robert Wislake was committed to the Gayle by Justes Raynell for stealing of Thomas Roberts sheepe.

The times must have been very unruly, if occurrences like the following were frequent. It is charitable to suppose that it was only the result of a Church Ale; but we have

already seen that Master Gib the younger was wont to use violence in his discussions.

The 2 day of July John Gibb the younger did throwe out Henry Buckingham out of the church porch of Cheryton fit spayne that hee fel out upon his joynts of his handes and did strike away the skin of them that they did blud and were mutched abruised that hee could doo littell all that weeke after.

The next note relating to manners and customs is even more shocking.

The 5 day of November being on the Sabbath day John Please recaved the communion and in the afternoone did play to skeals* and did prate and fight with John Heard hee did beat him and began with him 2 : or 3 : times. John Heard not giving him one blow nether proffering him any wrong.

This John Please, whose conduct is thus recorded, was always allowing his cattle to trespass on Roberts's ground, and was probably a source of annoyance. He kept an ale-house, and consequently was liable to prosecution for permitting gambling under his roof.

1629 The 23 day of November John Please did keepe card playing in his house and did play himsefe Witnesseth Mr Jampson and Thomas Roberts the younger and Richard Strong.

The following r cipe for toothache may have been found worth keeping by some member of the Roberts' family :

For to helpe acing teeth.

Yee must take ground Ivy more† and Pud-nettel-more and leaves of Rosemary and salt and cut it smale and powne it together and pit it to youre tooth if there bee a hole in him, if not to your iaw and hould it close betweene youre jawes.

The occasion of filling the office of High Sheriff was sometimes used as an opportunity for making a show. If a country gentleman was popular, his friends and neighbours would rally round to do him honour; and thus a goodly array of followers would be seen. The miserable remnant of this good old custom can be seen now in an assize town on the arrival of the judge, in the paltry exhibition of a dozen javelin-men and two trumpeters. John Evelyn notices this when his father served as High Sheriff: "1634. My

* Skeals, quarry keels, ninepins.

† More = Root.

father was appointed Sheriff for Surrey and Sussex before they were disjoyned. He had 116 servants in liverys, every one livery'd in green sattin doublets; divers gentlemen and persons of quality waited on him in the same garbe and habit, which at that time (when 30 or 40 was the usual retinue of the high sheriff) was esteem'd a great muster. Nor was this out of the least vanity that my Father exceeded (he was one of the greatest decliners of it), but because he could not refuse the civility of his friends and relations, who voluntarily came themselves, or sent their servants."

Mr John Davy* of Creedy was Head Sherif 1630 There were fifty followers that wore his cloth of clokes besides others.

Perhaps Mr. Davy had another object in view besides that of doing honour to his Majesty's representative, as the next entry runs thus :

Then about Midsummer Mr Sherrife was married.

The sight of a sheriff in all this glory may have been more than the fair lady could resist.

1630 Crediton market was removed about Hall eave.†

Charles I. had interfered to such an extent in the church matters of Scotland, that an insurrection of the Covenanters broke out. To suppress this an army was raised, and Roberts describes the impressment. Captain Norcot, or Northcot, doubtless made a good thing for himself by "pricking" well-to-do yeomen, and allowing them to redeem themselves by a small payment. Of the names given below Peter Pine had a vote for the county, and must have been a freeholder; and Roberts was in a position to pay rather than allow his kinsmen to be killed in Scotland.

1639 The 12 day of March John Roberts, Robert Roberts, Peeter Pine, William Marshall and William Beere were priet for Scotland. Then William Marshall and Robert Roberts were injoynd by Capting Norcot to pay thirty shillings a peece and the others were to get spared so God cheepe as they could.‡

1639 Mr. Marting§ of Axminster was Head Sherif

* John Davy, of Creedy, created baronet 1641, ancestor of the present owner of the farm Town Living in which Roberts lived.

† Hall eave = Halloweve.

‡ See Shakespere, *Henry IV.*, part ii., act iii., scene 2. God cheepe seems to mean as cheap as possible, or for as much as they could raise.

§ Sir Nicholas Martyn, Knight (Risdon), of Oton.

Notices of the improper behaviour of John Please have already been given. His name occurs frequently, and it would appear either that the constable had an especial animosity against him, or he must have been a desperate character.

The xiiijth day of March John Please had bin at Cheriton in the forenoon and afternoon hee came at Stockly Church and he had drunk hard at Cheriton that hee sleept part of the time that Mr Jamson reade the Cannons and all the while the salme was asinging & part of the time that the beeleeft was a saying untill George Matthews hurt him twice beefore he did awake and after prayer hee went out of the church ramling

The morals of the neighbourhood were evidently not improving, and Roberts's notions of propriety were being constantly outraged.

1641. The 1 day of February John Smart Counstabel did keep unlawful card play in his house. One Hancock and Hull and John Lane of Rudge playde sweepstake halfe crowne

The 11 day of Aprill John Smart did sit and tippell at Harrises house after evening prayer until night being on the Sabbath day. Witnesseth Roger Downe & Tamson * Heard

The three twenty day of Aprill there was one pedler of Rewe † ether Bramford ‡ at Harrises and did tippell there so long that was drunk & did abuse the tything man. Roger Downe spake the words: & the weeke before the widdowe Quikes boy Peeter Pine his boy and John Downe had wine at Harrises and a spende iiij d a peece there

The period of the civil war was now approaching, and among Roberts's notes are some few relating to scenes in that terrible drama which came under his own observation, or reported to him by his friends. The first alludes to the battle of Stamford, near Stratton.

1643 There was a greate fight at Stratton that there were by report killed and taken prisoners 2 ether 3 thousand There were killed fifty commanders at that time was killed Capting Hucway and Capting Isake

On the defeat of the Parliamentarians the victorious Cornish army marched into Devon, under Sir Ralph Hopton, and after passing by Exeter proceeded to Chard, to join Prince

* Tamson = Thomasin.

† Rewe, near Exeter.

‡ Bramford Speke.

Maurice. On their march they called at Crediton, and their pleasant ways are thus described :

There came in at Credyton of Cornishmen sum four ether five thousand and did Riefill and take away many mens goods, from Met Buegingame, and M^r John Rowe, M^r Throw Bridge, M^r Prouse, M^r Boulton, M^r Rogers, M^r Young with others to the vallue of one thousand pounds and a half and upwards by relayton of others.

It was such hateful excesses as this which soon made the name of Cavalier so detested in Devon.

The 11 day of March Exon was besieged by Sir Rafe Hoppun & by Prince Morrish.

The next line, but in a very different handwriting to the above quotation, is the following, evidently written by some other member of the Roberts family who was not particular as to what page he wrote on.

The third of February 1659 My Lord Munke came in at London.

Monk being a Devonshire man, his important share in the Restoration was a matter of pride to his fellow-countrymen.

1644 The last day of May the Queene came at Exon and toke up Bedford House.

Queen Henrietta Maria came to Exeter for her confinement, and was delivered on June 16th of a daughter, afterwards Duchess of Orleans. Roberts is wrong as to the date ; it should have been the first, and not the last day of May. On the approach of Essex and the Parliamentary army the Queen left Exeter, and with the escort of Prince Maurice made her way into Cornwall, and at Falmouth took ship for France.

In June the Queene lay at Credyton at Mr Tukers house and from thence shee rode at Lanson with all her troope. At the same time Prince Morrish came at Crediton with all his foreses

This entry is particularly interesting, inasmuch as it gives the route the Queen took on this occasion. Dunsford, by a misprint, rendered Lanson into Limson ; but the actual spelling is Lanson for Launceston.

Soon after the Queen's departure the Earl of Essex came on the scene.

The Errell of Essex came at Tiverton in the begining of July with all his forces. Being reported by one Thomas Lawrence that the errell had three hundered fifty and od carages and of horse beelongo thereunto for draught too thousand

Following quickly on the footsteps of Essex came the King and his son. But the note which mentions the King's visit to Crediton is in the same handwriting, and close beneath the announcement of Monk's entry into London, both probably written long afterwards. The King is described as Charles I. Charles II. must therefore have been on the throne, or a claimant for its possession.

The 25 of July King Charles the first and Prince Charles were in the great meddow at Crediton wth his army

Sir Edmund Walker gives the date of this review as the 27th of July. It was held in the well-known pasture field now called Lord's Meadow. This is the last record of any public event in the book, excepting two notices of High Sheriffs, and which are written at the foot of the page in which the announcement of Mr. Davy's marriage is made, 1630, but in a different handwriting.

1666 Mr Norly* of Pencoth was Head Shereve of Devon

1667 Mr Tucfield † of Fulford was Head Shereef of Devon.

There is no notice of Thomas Roberts's death, but there is of his ceasing to be constable; and certainly he deserved a holiday in his old age, after performing the duties of his office for nearly a quarter of a century. There is no date to this note, and it is not in his handwriting:

Thomas Roberts was Counstabell : 23 : years. then he was suppress by Ma Reynall and Mas John Nortcot the sayde Thomas Roberts was suppress the xxiiij th day of September: if hee had bin afore Whit Sunday it had abin xxiiij yeers when Thomas Roberts was suppress then the same time Peester Pyne was put in counstable.

Peter Pine was the individual who made the treasonable remark when the notice of the subsidy was given out in church, and who afterwards made disrespectful comments on the way Roberts kep order. It is to be hoped, for the sake of

* Henry Northleigh.

† John Tuckfield.

the parish, that he did his duty faithfully; though from the fact that Roberts held office for twenty-three years, one may conclude that on the whole he must have given satisfaction.

The latest entry in the book relates to the election as constable of a member of Roberts's family:

1672 The 11 day of Aprill Robert Roberts sun of Robert Roberts was sworn counstable.

It would appear from the many entries respecting different constables being appointed that there were always two at the same time. Perhaps, like the office of churchwarden, one may have been chosen by the parish and the other by the magistrates; this however is mere conjecture. But from the notices, it seems that although one constable left office, and another succeeded him, still the accounts were settled with Roberts. The collection of rates and taxes would render it very necessary that the constable should be a man of probity and of some substance, as large sums of money would from time to time pass through his hands. The following entry shows, that though Philip Marshall retires from office and John Smart succeeds him, the settlement of accounts is made with Roberts:

1639 The fourth day of October Phillip Marshall went out of his counstable ship and that day John Smart was put in counstabell by Justes Davy and Justes Tucfield The 5 day of November Phillip Marshall gave in his account to his Psh and his receite was 3^l : 6^s : 4^d and his disbursements were 2^l : 1^s : 0^d and of that there was 8^s dewe unto the Psish upon his former account which for that 8^s I had made levell on the last recconing. And at that time Phillip Marshall payde over unto John Smart : 14^d which was dew unto the parrish.

Among the memoranda of moneys paid there are some which show that Roberts did not perform all the labour of his farm personally, but paid for help from others at a contract price, or so much per "forme" of ploughing or digging. The word "forme" is used as a measure of land, and is frequently met with, though it appears to be obsolete now.

The same day payde for digging two formes 1^s : 9^d

It seems probable that Thomas Roberts and Robert Roberts, though living together, or at all events making entries in the same book, had different land. For instance, Thomas Roberts pays his taxes to John Smart, while Robert Roberts settles with

Thomas Roberts. Again, Thomas Roberts pays rates for his farm, Town Living, while Robert Roberts enters Lord's rent in his accounts, which Thomas does not, being a freeholder :

1640 The 16th day of February payde to John Smart for Ship money for Town Living 8^s

The iv day of May payde to John Smart for Town Living for 4 rates 4^s 4^d

The 24th day of May payde Richard Heard being churchwarding one Rate 10^d

Robert Roberts's accounts for the same year are more complete :

1640 The 26th day of Aprill paid Thomas Roberts

For the Lords Rent	.	.	.	17 ^s 4 ^d
For the poore	.	.	.	5 ^s 1 ^d
For the warden	.	.	.	2 ^s 5 ^d
For the clarke	.	.	.	18 ^d
The whole is	.	.	.	26 ^s 4 ^d

The accounts for the next year, 1641, are somewhat different :

1641 The 9th day of May payde to Thomas Roberts

For the Lords Rent	.	.	.	xvij ^s
For the poore	.	.	.	iiiij ^s 8 ^d
For the church and the clearke	.	.	.	iiiij ^s v ^d
For to subsidies	.	.	.	viiij ^s x ^d
For Ship money	.	.	.	x ^s ij ^d
For 3 hogs ides powning *	.	.	.	ij ^s vj ^d

These payments of ship money so long after that peculiar tax had been declared illegal, were probably merely a continuation of the use of a name applied to one of the subsidies.

The accounts for 1642 are much like those of 1641, with the exception that there is no mention of ship money. In 1643 the civil war begins to touch the Devonshire farmer's pocket :

1643 The 4th day of Aprill payde to Thomas Roberts

For 3 Marshall Rates	.	.	.	3 ^s 4 ^d
For the poore for 24 months	.	.	.	viiij ^s
For 2 rates for the King's services	.	.	.	iiij ^s 4 ^d
For the Lords rent	.	.	.	xvij ^s 4 ^d
For the church and the clearke	.	.	.	iiiij ^s v ^d

The 16th day of July payde to Thomas Roberts

For too weeks pay for the army	.	.	.	ix ^s ij ^d
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* Powning = Crushing the juice from the apples to make cider.

In this account are found the various names of the rates levied during the war. "Marshall Rates" may have been those levied in the county by the commissioners seated at Exeter, to be applied to building fortresses and other military purposes. "Rates for the King's services" may mean money raised to be sent to head-quarters; and "the two weeks' pay for the army" was extracted from the peasants by the general in command of the army having possession of the vicinity for the time being.

The accounts for 1644 show that the Royal party were reduced to the necessity of anticipating the payment of the taxes for the next year. The game was nearly at an end:

1644 The 19th day of January payde to Thomas Robert

For 3 weeks pay . . . viij^s ix^d

The 28 day of Aprill payde to Thomas Roberts the third part of all taxes that are to bee payde for my part for one whole yeere

For the Lords Rent . . . xvij^s iiij^d

For the clearke & wardings . . . iiij^s iiij^d

For the poore . . . iiij^s x^d

For too rates for the King . . . iiij^s iiij^d

The sum is 1^l — 8^s — 10^d

At that time payde to Thomas Roberts more for two Rates for the King for the next yeere iiij^s iiij^d

With this must end the selection of extracts from Thomas Roberts's memorandum book. It has been found quite impossible to give them in the order in which they are found, as they are mixed up with a charming defiance of regularity, and utterly independent of one another. Doubtless Roberts had other books, but which are unfortunately lost, as the accounts come to a somewhat sudden termination with some fragmentary items of 1646, the next page being illegible. It is much to be regretted that other Devonshire farmers who lived in bygone days have not left books to show that they knew and acted on the famous motto of Captain Cuttle: "When found make a note of."

THE FOSSILS OF THE CULM MEASURE LIMESTONES AROUND HOLCOMBE ROGUS.

BY THE REV. W. DOWNES.

(Read at Paignton, August, 1878.)

IN the autumn of last year Mr. H. B. Woodward, F.G.S., in the course of correspondence, remarked to me that good collections of fossils from the limestones of Holcombe Rogus were wanted; and he seemed to imply that, living as I did in the neighbourhood of those rocks, the work of collecting their fossils would be one which I might suitably undertake. I was much obliged to him for the suggestion, and I determined to do my best to meet the want. It soon, however, became evident that great results were not to be expected. Good collections of fossils cannot be made where very few fossils occur, and where those few are hardly ever found in a good state of preservation.

The same correspondent also kindly sent a list of those works which contain all, as he believes, which is known of those rocks and of their fossils. He referred me to—

1. Sedgwick and Murchison on the "Physical Structure of Devonshire."*

2. De la Beche. *Report on the Geology of Cornwall, Devon, and West Somerset.* 1839.

3. Phillips's *Palæozoic Fossils of Cornwall, Devon, and West Somerset.* 1841.

Of these the two former deal principally with the stratigraphical features of the district; but they also make some brief mention of the fossils, and of their "extreme paucity." The work of Phillips being professedly a palæontological one, gives, as might be expected, the bulk of the information upon this subject, the greater part of which I was enabled to verify, though on some points my experience did not exactly coincide with his.

* *Transactions Geological Society.*

The area which I searched may be generally described as that which is included within a radius of about two miles from the village of Holcombe Rogus on all sides of it. It is marked in the ordnance map by five nearly parallel ridges of limestone rock, extending from Lear and Kitton* on the north; to Rocknal, Westleigh, and Canonsleigh on the south. Among these limestone ridges there are more than twenty quarries, all of which I have searched diligently.

The authors above named do not appear to be agreed on every point. Thus Sedgwick and Murchison speak of "the extreme paucity of the fossils, and their *absence* from the accompanying shales;"† while Phillips tells us that on the southern slopes of Westleigh "the shale is *very full* of *Goniatites*."‡

Again, Sedgwick and Murchison, after mentioning in the text that *Posidonomyæ* are not to be found at Westleigh, add in a foot-note that this fossil has been found there by Major Harding. De la Beche however, apparently not aware of Major Harding's discovery, again denies the occurrence of *Posidonomya* at Westleigh. He says, "The *posidoniae* which seem to have thriven amid the carbonaceous waters to the westward have not been detected in these limestones; but a *Goniatite*, found associated in the carbonaceous limestone of Swimbridge, near Barnstaple, with *posidoniae*, is found at Westleigh."§ Phillips, in 1841, briefly remarks that there are "a few *posidoniae*."||

Two things in the reports above quoted have surprised me. (1) That Phillips should have described the shale on the "southern slopes" as "very full of *Goniatites*;" and (2) that there should ever have been any doubt as to the occurrence there of *Posidonomyæ*.

Probably the beds of shale now exposed on the "southern slopes" differ in their fossil contents from those which were examined by Phillips nearly forty years ago; for, after much labour in searching, I could only discover a few doubtful traces of *Goniatites* along all the southern border. Eventually I found fossils in some degree answering to the description; but not on the southern slopes. At Whipcoats, in an old quarry to the east of the canal, are *Goniatites* (? species). They are, however, in beds of hard limestone, not in shale.

Again, in a quarry on the north side of the road leading

* Written "Killon" in the ordnance map and in De la Beche's *Report*.

† *Trans. Geo. Soc.*, 2nd series, vol. v. p. 675.

‡ *Palæozoic Fossils*, p. 190. § *Report*, p. 105.

|| *Palæozoic Fossils*, p. 190.

from Holcombe Rogus to Hockworthy there are abundant impressions in *shale* (but over a very limited area) of some coiled shells. Some of these appear to correspond with Phillips's figures of *G. Spirorbis*. Others do not agree with either of Phillips's figures (*G. Mixolobus* and *G. Spirorbis*);* and in the opinion of Mr. D'Urban, F.L.S., resemble *Euomphalus* rather than *Goniatites*. Others again are so obscure, that a probability only can be adduced that they may be organisms identical with those which are found in proximity to them—a probability which is increased by the fact that many gradations of obscurity are observable. No sutures are visible. Unless this spot be held to answer to the description, I can find no "shale very full of *Goniatites*." In the Albert Memorial Museum they have one *Goniatite* from Westleigh, which Mr. D'Urban thinks may be *G. Sphaericus* (Martin); but he does not consider that it resembles anything figured by Phillips.

On the other hand, *Posidonomyæ* proved persistent all along the "southern slopes"—not, indeed, in such abundance as at Bampton and other places to the far westward, but in sufficient numbers to render it still the characteristic fossil of these rocks. It seldom occurs in the beds of hard limestone; but it is in every bed of shale in the southern division of the area. In the northern ridges I did not find it.

The *Posidonomyæ* occur sometimes singly, sometimes, as Phillips describes, "impressed one upon another," "without fracture," thus showing the thin and flexible nature of the shell.† In a few specimens from the limestone the original convexity of the shell is preserved, while in the shale they are invariably flattened, thus illustrating the two different conditions of deposit.

Phillips figures two species of *Posidonomyæ* from Westleigh, *P. Becheri* and *P. lateralis*. These two specific names are however treated by Bailly as synonymous. The latter also quotes Sir R. Murchison to show that this fossil has a special interest as having furnished the key to the age of these limestones, and as showing their connection in time with the Irish "Calp," and the carboniferous limestones of Northumberland.‡

I had the good fortune to find some fragments of this fossil, representing an individual far exceeding in dimensions the ordinary type. The largest size quoted by Phillips is about two inches by four and a half inches, and the average specimens

* *Palæozoic Fossils*, p. 122.

† *Palæozoic Fossils*, p. 43.

‡ Bailly's *Characteristic British Fossils*, p. 114.

are certainly smaller than this, whereas my fragments indicate an individual fourteen or fifteen inches from hinge-line to base. I did not find them *in situ*, but in a small heap of shattered shale, distinguishable from the waste heap upon which it lay, as evidently a separate wheelbarrow load. The pieces all came from this one wheelbarrow load, and nearly all from the same side of the load, and are all in shale of the same peculiar colour. There was some difficulty in securing the specimens, owing to the fact that the shale was split up into thin plates, often not in natural apposition to each other, and that the fossil impression lay on a plane at right angles, or nearly so, to the plates. Professor Rupert Jones, F.R.S., to whom, by the kind advice of Mr. Pengelly, F.R.S., the specimens were sent, suggests that these plates probably mark planes of cleavage, the true plane of bedding being that upon which the fossil lies. With the specimens I sent to Professor R. Jones an enlarged drawing of one of Phillips's figures—as large as could be drawn upon a whole sheet of foolscap—and I dotted upon it the shell areas which I supposed to be represented by my fragments. In acknowledging the parcel, he says that he is unable to match the specimens with the areas marked, but that “doubtless the idea of their relation is sufficiently well established.” He adds also that he does not “see any objection to the idea of the *Posidonomyæ* being of this great size; for the analogous (if not allied) *Inocerami* and *Pernaæ* may be and are of very great extent.”

It is seldom possible to mistake the bedding at Westleigh, and cleavage is very rarely found; but I believe I can discern cleavage on a small scale sometimes in the shales, though the harder beds are quite unaffected by it.

Each of the authors above quoted mentions the occurrence of crinoidal beds. Crinoidal joints are to be found in most of the weathered rocks. The old quarry at Rocknal especially is full of them. At Hockworthy some joints occur very different in appearance to those at Rocknal. The Rocknal joints are smooth, or marked by a few lines radiating from the alimentary canal. The Hockworthy joints, on the other hand, have the outer rim only preserved, which is minutely crenulated. Perhaps the difference may mark two species. Some beds abound with what the workmen call “flint balls,” which at first sight might be taken for mere siliceous nodules. It struck me, however, that these have a peculiar cup-like and uniform shape. One side is generally developed more than the other, and when perfect they show traces of a stem at the base. Some may be seen on the exposed face of the

rock, with from three to six inches of stem attached, and with crinoidal joints lying about them. Though they show no trace of pelvic plate, nor of arms, nor indeed any independent proof of organic origin, one can have little doubt but that they indicate the position of what have been crinoidal calices, though now obscured by concretionary action.

The scanty occurrence of a few Brachiopoda is mentioned both by De la Beche and by Phillips. I have also found a few, only one of which however seems capable of identification. This seems to correspond with Phillips's figure of *Orthis Hardrensis* (syn. *Chonetes Hardrensis*). In this opinion I am confirmed by Mr. D'Urban. The cardinal spines are not visible.

No mention is made in the works above quoted of any other Lamellibranchiata except Posidonomya. I have however two, both obscure.

The occurrence of "several plants" is mentioned by Phillips.* Vegetable impressions, in a very imperfect state, abound at the old quarry at Knowle; and they may also be found scantily elsewhere. One small impression from Rocknal Mr. D'Urban describes as "a fucoid." A Calamite also has been found by Mr. Champenowne at Holcombe.

It is probable that the number of new sections exposed during the last forty years may enable the stratigraphical geologist to add somewhat to the accounts furnished by the earlier authors upon the structure of this district; but they afford very little assistance to the palæontologist, whose most fruitful field lies among the weathered rocks.

"The characteristic dissemination through the more earthy base of the rock of distinct crystals of carbonate of lime" has been noticed by Sedgwick and Murchison.† The prevalence of silica is also a noticeable peculiarity. To some such peculiar mineralogical conditions we must look for the probable reason of the fact, that good specimens of fossils are never to be found even in well-weathered fossiliferous rock.

* *Palæozoic Fossils*, p. 190.

† *Trans. Geo. Soc.*, 2nd series, vol. v. p. 675.

ARCHÆOLOGICAL DISCOVERIES IN EXETER, MADE DURING APRIL AND MAY, 1878.

BY EDWARD PARFITT.

(Read at Paignton, August, 1878.)

IN some excavations that have been made by Messrs. Kennaway and Co. for the enlargement of their wine cellars, the workmen have come upon quite a mine of archæological treasures; namely, Greek and Roman coins, pottery of various kinds, bones of animals, charcoal, bronze articles, and no less than eighteen human skeletons, more or less perfect.

The last have excited a good deal of curiosity and speculation as to how they came to be buried there (if they were really buried). Whether this place was a graveyard, either public, or attached to some religious house, church, or chapel, has, if possible, to be ascertained.

The place where these bones, &c., were discovered was in the courtyard, and partly under the house lately in the occupation of Mr. Northway, one of the lay vicars of the Cathedral, situate on the left as you ascend the street called Palace Gate from South Street, about the centre below where the Gate used to stand.

The wall of the Close, built in 1295, ran directly behind this house, and the end of one of the new cellars abuts against a part of the bottom of the wall. In the centre of the cellar, and fronting the passage between the stacks of wine, is a Gothic doorway of dressed stone in excellent preservation. This doorway is about three feet six inches wide, and six feet high, and opens into a passage which probably leads into the Cathedral. (?) From this doorway being built of dressed stone, I should presume that this was an outer door; that is, the passage did not extend on this side of it, but that it was a sort of postern-gate, which would open, I presume, on level, or comparatively level, ground. All this, then, outside the wall of the Close, had been filled up with earth and the *débris* of old buildings to the height of several feet above the doorway; and it was in the upper

part of this that the coins, pottery, and skeletons lay. The whole area occupied by the skeletons was about ten feet square; but as one was more than half under the floor of the house, it is thought that there may probably be more of them; but as the house was not to be pulled down, there they must remain.

Presuming that this is the case, and that after the wall of the Close was destroyed, and the place was filled up with the *débris* before spoken of, was this ground used as a burial-ground, the same as the whole of the Cathedral Close formerly was? That the Close was the common graveyard for upwards of nine hundred years we have historical evidence.

Another question has been raised; namely, Could this place have been the graveyard to St. James's Church, which, according to Dr. Oliver, stood at the corner of Palace Street, the back part of which probably extended nearly, if not quite, as far as where these human remains were found? Then, again, I am informed that in the gardens opposite, on the other side of the street, human bones were constantly being dug up about thirty years ago. From this it would appear that the whole of the ground about there was used for burial purposes. (?)

Another suggestion has been made, that this might have been the private ground of an ancient priory founded by Bishop William Warelwast. He was made bishop in 1107, and died in 1127, so that between these years no doubt the Priory was built.

The old Bear Inn, in Southgate Street, stood on the site of this old priory. "Great part of the old buildings, particularly the chapel, was standing a few years since. This venerable pile of buildings, being in a ruinous state, was pulled down, and a dwelling-house, offices, &c., erected on the site by Mr. Robert Russell, who was employed in the waggon business, and in 1798, when the French threatened the invasion of England, offered to lend the Government three hundred horses." *

In the Plympton Priory Rental, of September 20th, 1481, this inn is described as then being newly rebuilt "*de novo reedificatum*." † And we are also told, by the same authority, that this Bear Inn was the town-house of the Abbot of Tavistock. "The last abbot leased it for a term of sixty years, from Nov. 7th, 1538 (?), to Edward Brigeman and Jane his wife, their executors and assignees . . . and King Henry VIII., on January 30, 1548, granted the premises to William Abbot,

* Jenkins's *History of Exeter*, p. 375. † Oliver's *Monasticon*, p. 93.

Esq., and his heirs for ever. This William Abbot sold the same, on Feb. 15, 1548, to Griffin Ameredith and John Fortescue."

From this it would seem that this priory ceased to be such sometime in the thirteenth century, when it was converted into the Bear Inn; so that if burials took place in the ground attached to the chapel, this was before it became the Bear Inn. That the grounds of this priory extended to where these human remains were found, I think very probable.

The oldest map we have of the city, 1610, shows the ground on both sides of Palace Gate as open, with no buildings on it; but I would not lay too much stress on this work of the map-maker.

In the days of the Roman Empire burials were not allowed to take place inside the cities and towns; and it was not in the power of Christians to transgress the laws of the empire, which forbade interment within the walls of cities. If this law was carried out it would at once show that these were not Roman.

The burying of bodies east and west would seem to be peculiar to the Christians, and is in fact a remnant of the orientation of the so-called heathen nations of the east. Thus in Dr. William Smith's *Dictionary of Christian Antiquities* it is said that "when the body was lowered into the grave it was with the face turned upwards, and with the feet towards the east, in token of the sure and certain hope of the coming of the Sun of Righteousness, and the resurrection of the dead." (page 253.) It will be observed that it is the *sun*, the bright luminary of day, that is here alluded to, proving at once the origin of this mode of burial—of the orientation or turning towards the rising sun, the lord of day.

I do not know at what date burials began to be made when the bodies were laid east and west, or as near these points as could be; for if any importance is to be ascribed to the position in which these skeletons were found, and I think there is, it would place them anterior to the time and mode of Christian burial. In Roma Sotteranea the graves of the early Christians are not distinguished by this mark of orientation. Perhaps these people came under the anathema of the Pope. In the year 1200 "the Pope again interdicted the whole nation. By the terrible sentence a stop was immediately put to divine service, and the administering of all the sacraments, except baptism; the church doors were shut, and the images of the saints laid on the ground. The dead were refused burial, and were thrown

into ditches and on the highways without any ceremony. Marriages were celebrated in the churchyards; the people were forbid the use of flesh meats; they were debarred from all pleasure, from shaving their beards, saluting each other, and were absolved from all allegiance to their sovereign."*

From the position of these skeletons, they had very much the appearance of having been deposited in a very irregular fashion, or being thrown into the place where they were found; for they were lying in all directions—one was across the other, and one was doubled up, something after the Indian mode of placing them in a sitting posture. No indication of coffins was to be found, and it is presumed from this that they had none.

A similar discovery to the one we are endeavouring to describe has been made this year, May 4th, 1878, as reported in the *Times*, p. 7, headed "Discovery of human remains in the City" (of London). It says: "The relative positions of those last discovered would seem to indicate that the coffins, if any, in which the bodies were buried were placed the one across the other, the skeletons being found in that position, one with the head to the north, and the other the feet to the south, and the other lying east and west. These were found at the corner of Spital Square, Bishopsgate, and were undoubtedly Roman." This coincides in a remarkable manner with those found at Palace Gate, and would almost lead one to believe that these were also Roman.

In Waring's *Monuments of Remote Ages*, plate 25, figure 4, is a sketch of a grave-mound at Driffield; Yorkshire. In this the bodies are seen to have been deposited in every direction, and in one instance they lay across each other, the same as has been already described, and others again are seen in a sitting posture, similar to the one found here in this excavation.

On the same plate, figure 5, is another grave-mound, at Somsais, France. In this the bodies were laid at all points of the compass; and in one instance, as was seen in the other, and in this at Palace Gate, one was laid across the other. I cannot help thinking, from this repetition of crossing the bodies, that there is some meaning attached to it, and not, as Mr. Waring supposes, that it was accidental. But if any meaning is to be attached to this mode of interment, we must at once grant that the bodies were buried, and that they were not thrown in pell-mell, as they appear to have been. They do not appear to have been warriors, as no implements of warfare were found with them, which is generally the case

* Jenkins's *History of Exeter*, edit. 1806, p. 35.

where such received burial at the hands of their comrades in ancient times. Who they were, then, and how they came there, is a question that, so far as I can see, cannot be answered. At the same time their proximity to the Samian pottery, and the Roman and Greek coins, would lead one to suppose that they were either Greeks or Romans; for one of the coins lay in such a position that it may have been in the pocket of the trowsers of the person—that is, if he wore trowsers, and had pockets the same as we have.

These skeletons lay from a foot to about three feet below the surface of the courtyard.

We now come to the pottery, most of which is of strong, thick Samian ware, such as has been found in the greatest abundance in Exeter, more perhaps here than anywhere else in England in the same area. The Romans or Romano-British people must either have been very careless or very extravagant in their household utensils, if we may judge by the quantity that has been reported of broken ware; for Captain Shortt tells us, that just before he came to Exeter, in making some excavations, they literally *carted* it away in large quantities. And certainly now in almost every excavation quantities of this ware turn up, but unfortunately it is mostly in fragments. It is very rarely that an entire piece is found, or that the pieces can be fitted together. Fortunately, however, Mr. Pierce has found the parts of one little vessel, and has fitted them together. It is in shape and size very like a small basin as used in culinary purposes at the present day. In width over all it measures three inches and seven-eighths; depth inside, one inch and half; depth outside, from top rim to bottom on which it stands, two inches; width of bottom, one inch and six-eighths; width of bottom of vessel inside, one inch and six-eighths. The only ornamentation on it is a narrow string line round the middle of the outside, and a similar line immediately below the rim inside.

The potter's mark is on the bottom inside, on a label-like impression, in the middle of which are the letters C A R encircled in a ring-like mark scratched in the clay after the label impression was imprinted. At each end of the label, beyond the letters and ring, are two circular impressions. I cannot find this potter's mark on any thing that has been found before in Exeter or elsewhere, except it be an abbreviation for CARINVS. This has been found in London, and reported by Mr. C. Roach Smith in *Archæologia*, vol. xxvii. p. 152.

This simple and unadorned form of vessel does not appear

to be common; the nearest approach to it is figured in *Archæologia*, vol. xxvi. pl. 44, fig. 8, amongst a group of four that were found at Litington, in Cambridgeshire, and at Uriconium.* The next we have is a fragment of red ware, ornamented with an undulating embossed figure, alternated with medallions and the leaves and buds of an acutely cordate-leaved water plant, the lotus of Egypt. On the portion of the medallion, the most perfect of the two, is the figure of a man, with one arm elevated, and holding something in the other; but it is not a good impression. Above and below this are double impressed lines, and on the lower one is the figure of a goose. On another and much smaller piece of the same ware is a hare, apparently running at full speed, as if hunted by dogs. In *Archæologia*, vol. viii. pl. 10, fig. 1, is a portion of a vessel of black ware, on which we have a hare running, as seen in this fragment from Palace Gate. The one on the black ware is from a vast collection found in Lombard Street, London.

A "patara," described by Captain Shortt, found near St. David's Church, corresponds very nearly with this. He says: "The second, a neat semicircular pattern, forming a triple semicircle, in each of which is a cuspidated or spiked-shaped water plant leaf; the third is a star or *mullet* pattern in a double waved border. The centre exhibits hunting emblems—the hare on her seat, and dogs of the chase in ardent pursuit, between each of which is a large aquatic plant with many leaves radiating from a common stem." †

The base of another vessel of red or Samian ware has the potter's name impressed on it, ELSIANI. M. This is, so far as I can discover, and I have examined some scores, a new name. Unfortunately no more of the vessel existed, so that we cannot tell if it was ornamented or not. The name was impressed on the bottom, outside.

A bottom part of a vessel of red Samian ware had what I had never seen or heard of before, and that was the bottom inside was thickly set with small grains of quartz sand, the grains varying in size from that of a good sized shot to half the size of a pea. They are rounded as if worn by attrition, and have very much the appearance of the sand found on Little Haldon and in the valley of the Teign, near Newton. The grains are firmly pressed into the clay, and seem to have been glazed over, so that in passing the finger over the bottom of the vessel it feels nearly smooth. I thought when

* See *Historical Accounts*, p. 226. By T. Wright.

† *Coll. Curiosa. Ant. Dunmonii*, p. 91.

first I saw it that the vessel was probably used for triturating corn, or something of that kind, but from its smoothness I do not think it would answer this purpose. It may however have belonged to some Æsculapius, and been used for bruising herbs or mixing unguents.

Capt. Shortt reports a *mortarium* having been found in the western market. It was made of white baked clay, with small gravel or grit intermixed to facilitate trituration. This corresponds exactly with one described and figured by Mr. A. J. Kempe, found in Crooked Lane, London, and figured with the *pistillum* in *Archæologia*, vol. xxiv. pl. 44, figs. 2, 3, 4. These, it will be observed, are made of a coarser and stronger material than the red Samian ware. I therefore regard our fragment of vessel as of a unique description.

There were many fragments of rather thick black ware not so highly glazed as the red. One piece, part of a shallow vessel or patera, is ornamented on the outside with small, narrow cross hatching lines, forming a lattice pattern.

Before proceeding to describe the coarser ware found in this excavation, it may be interesting to have the opinion of one of the best authorities, Dr. Samuel Birch, as to the date of the Roman red ware. Dr. Birch says: "The Roman red ware found in England seems from its inscriptions to be as late as the second or third centuries. The style of embossing ware with raised figures was almost peculiar to Italy, where in the fifth and sixth century B.C. the fictile art had obtained considerable excellence; and the black and red wares, with bas-reliefs of the Etruscan furnaces, seem the prototypes of the subsequent red ware."*

This date corresponds very nearly with that expressed by another investigator into the date of the Roman invasion of Britain, and drawn from quite another source; namely, from a Greek historian and a contemporary, when Aulus Plautus landed his troops on British soil in A.D. 42. I shall, however, refer to this again when treating of the coins.

There were numbers of fragments of coarse ware, some glazed, and others not so. The first is a portion of what seems to have been a mortuary urn, ornamented on the outside with circular markings, each larger circle having a smaller one inside. This had on it a greenish glaze, which had become more or less corroded, as little holes are eaten through the glaze. The style of ornamentation as seen on this vessel is not common. There is one, however, so marked in Waring's *Ceramic Art in Remote Ages*, pl. 4, fig. 55.

* *Archæologia*, vol. xxxi. p. 266.

The upper portion of another, I presume to have been a funeral urn, has a wide splayed rim, unglazed, and is made of very coarse clay, with numbers of small grains of rounded quartz. The clay is not the least vitrified, but it has the appearance of having been in a smoky fire; and it has also the appearance of something having been burned inside it, as it is much blackened. A similar vessel, from the description, would seem to have been found to the north of St. David's Church, as recorded by Capt. Shortt.* He says: "The cinerous matter (or ashes of the funeral pyre) was still adhering to the exterior of the urn, which was fluted transversely inside, and composed of very hard and strong grit, intermixed with sand and very minute particles of gravel."

The piece above described is the most primitive in appearance of all that was found at Palace Gate. Beside these there were fragments of very coarse ware, with undefinable patterns formed in different coloured glaze, such as green, blue, and white. These I regard as of more recent date. (?)

With these was a piece of Purbeck limestone, worked and polished, which from its form I consider to have been the top or head of a small shaft. There were also two pieces of the rim of what I think was a *mortarium* made of millstone grit. These, from the workmanship, are of a much more recent date than the Pottery.

Of bronze articles only parts of three were found; namely, part of a fibula, or some ornament analogous to it, and part of a pin—it may have been a hair-pin, or the pin of a fibula—also a part of another pin. The only other part of a lady's toilet found was a fine-toothed comb. This is more or less broken, but is quite as good as some in the museum of the Royal Irish Academy and elsewhere.† But the nearest to the one we have in view is figured in the *Archæologia*, vol. xv. pl. 51, found in the ruins of Ichleton Nunnery, Cambridgeshire. The principal difference is that the latter is highly ornamented, whereas the one found at Palace Gate is plain, and the teeth on both sides are alike.

It is somewhat curious, but nevertheless a fact, that in most of the *débris* of the old Romans, not only in Exeter, but in London and elsewhere, numbers of bones of animals are found mixed up with red Samian, and fragments of other ware. Thus, in the excavation under examination, the follow-

* *Coll. Cur. Ant. Dun.*, p. 91.

† See *Cat of Antiquities, of Animal and Bronze*, by W. R. Wilde, p. 272; Wright's *Uriconium*, p. 278.

ing bones of animals have been found: Core of the horn of ox, teeth of ox, jaw of pig, and jaw of sheep, and many smaller bones more or less broken.

Charcoal is another thing found equally common with the bones and pottery, and as generally distributed. At Palace Gate it formed a conspicuous mass together with a quantity of black earth, forming an irregular stratum.

It was on this black earth, and partly buried in it, the skeletons were found. Mr. C. Roach Smith says, that wherever the ground is moist, and highly impregnated with vegetable and animal matter, it is of an inky blackness in colour, evidently ancient cesspools, latrinæ, &c. In this I concur with him. We need not go far for examples of this kind of thing in the present day; for in most scattered villages the cottagers make a sort of "kitchen midden" outside their doors, so that the present illustrates the past, if this under consideration was not the site of a funeral pyre; but the quantity of Samian and other ware, with the bones of animals, as well as the human skeletons, had not been subjected to the action of fire. One piece of charcoal, not quite so much burnt as the rest, I am inclined to regard as foreign to this country; it has the appearance at first sight to the structure of cane, the pores between the bundles of woody fibre are so large. I do not know any British wood like it.

There were also found in this black earth some large oyster-shells. The Romans or Romano-British would seem to have been very fond of this shell-fish. Dr. Mills, when he described the finding of the five penates at the corner of Broadgate, says that these household gods "were found with, or rather surrounded by a considerable quantity of oyster-shells. There were also in the same mass various fragments of urns of different forms, sizes, colours, and kinds of earth," &c. (*Archæologia*, vol. vi. pp. 1-5.)

Coins, both Greek and Roman, appear to have been, and still are, comparatively common; for in every excavation that is made in the city coins are almost sure to be found. Fifteen or sixteen were found in this small excavation at Palace Gate.

Capt. Shortt says that repeated discoveries have been made in Exeter and its vicinity of Egypto-Greek coins of the Emperors Trajan, Adrian, Antoninus, Severus, &c., all of the Alexandrian mint, which are the most numerous, as also many others, some coined at Antioch, others at Hieropolis, Sidon, Zeugena on the Euphrates. These are supposed to

have made their way into Britain during the great tin trade from Alexandria, the immense emporium of riches, which might be regarded almost in the light of a second empire, and scarcely inferior to Rome itself;* and the *Saxon Chronicle* even goes so far as to assert that the Dunmonii originally came from Armenia. When Capt. Shortt announced the discovery of Greek coins found in Exeter, he was met by numismatists in the following manner: "Our antiquarian correspondent at Exeter has surely been grossly deceived. The idea of Greek coins having been found in such numbers in that city is too preposterous to require serious refutation. Such few Greek coins as have occasionally been found in England have been lost from collections, and not brought here at the time they were current."†

But since then numbers of others have been found; and in this the latest find we have nine out of fifteen Greek coins found at Palace Gate, and six of these were coined at one mint—Tomi, in Moesia. This is a town, comparatively lately determined, on the coast of the Euxine Sea; and Dr. W. Smith observes, in his recently published *Ancient Atlas*, 1875, that M. C. Allard, *La Bulgarie Oriental*, Paris, 1864, deserves the credit for having more accurately determined the site of Tomi (Köstendje), and some of the neighbouring towns in Lower Moesia.

Now it is a question that probably never will be settled, whether these Greek coins were brought here in the way of commerce in the trade of tin, or whether they were brought here by the Greek soldiers belonging to the Roman army. From their numbers I should rather lean to the side of trade; at the same time I think this trade in tin has been much exaggerated, if one may judge by the workings left by them on the borders of Dartmoor.

"Polybius is said to have written a treatise on the commerce and the preparation of tin; it is the only document that is said to bear expressly on this subject. He lived about 170, B.C., at which time the Greeks are supposed to have been first acquainted with our island; that the merchants of Dunmonium in particular had been long familiar to the Greeks, having traded, it is said, for ages to the Mediterranean before the invasion of the Romans."‡

We have always been led to believe, and it is the general belief, that the Phœnicians were the principal traders in the

* *Sylva Antiqua Iscra*, p. 83.

† *Gentlemen's Magazine*, 1837, new series, v. vii p. 450.

‡ *Sylva Antiqua Iscana*, pp. 80, 81.

tin trade. If this were the case, is it not curious that scarcely any of their money is found here?

The horse and the fishes, so conspicuous on their coins, could not be mistaken; beside, the lettering is different to that on the Greek coins. There must then have been some obvious reason for the number of Greek coins found here. One would think that the Greek cohorts employed by the Romans, when brought to this country, would scarcely be so flush of money as is represented by the various finds that have been made in this city alone, even if they sowed it broadcast over the land.

If we ascribe this money to the Greek traders, which are said to have been anterior to the Roman invasion, this does not accord with the dates of the reigning sovereigns depicted on the coins, as they are all within the period of the Roman invasion of this country.

The invasion of Britain is said by a contemporary Greek historian to have been made by Aulus Plautius, who landed his legions here in A.D. 42. And in A.D. 409, after a rule of just three hundred and sixty-seven years, the Romans abandoned the island, which henceforth, until the arrival of the Saxons, about half a century later, was a miserable wreck, held piecemeal by domineering municipalities or ambitious chieftains, aptly designated by Procopius as "tyrants."

The earliest of the Greek coins that have been found in this excavation was coined at Nicopolis, in Moesia, and bearing the bust of Septimus Severus, date A.D. 193-211; and the earliest Roman coin found in the same excavation, date A.D. 98-117, bearing the bust of Trajan. This all coincides with the Roman occupation.

There is however a possibility, as also a probability, that the Greeks in early times, before the Roman invasion, did really trade with this country; for there is the authority of Dr. Mommsen for stating that great rivalry existed between the Phœnicians and the Hellenes in commerce and navigation of the Mediterranean during the regal period of Rome.

Those two great nations contended for supremacy on all the shores of the Mediterranean, in Greece even and Asia Minor, in Crete and Cyprus, and on the African, Spanish, and Celtic coasts, so that it need be no great surprise if Greek coins be found here bearing date anterior to the Roman invasion, or even before the Christian era. At the same time, I am strongly of opinion that the Greek coins found here so entirely mixed up with those of the Romans were brought here in Roman times, either by Greek soldiers or in the way of

trade; for it is most probable that the Hellenes traded with this country during the Roman occupation.

In conclusion, although it is impossible to tell to whom the skeletons belonged, the following may perhaps throw a ray of light on them, and why they were buried in the kitchen midden or rubbish heap. Mr. Hugh W. Diamond says, "The rich were interred with vain and costly ceremonies, which have been too often and ably described to need any repetition. But the poor, the prodigal, and the malefactor were all consigned to one common place; their bodies not always subjected to the ceremony of cremation, but were interred in *paticuli* within or in the immediate neighbourhood of the cities, a foul and pestilential practice which has been so successfully imitated in our metropolis."*

My best thanks are due to the Messrs. Pierce and Captain Thompson for their kindness in allowing me to inspect the excavation, and also to quietly inspect and examine the objects found.

GREEK COINS.

1. Nicopolis, Mœsiæ. Sept. Severus. A.D. 193–211.

Obv.CETHPOC TE. Bust of Emp., right, laureate.

Rev. TTI A ΘOTTEPTT [AAOT NIK] OTTOA IPOC IC.
Hermes, naked, standing left.

2. Tomi, Mœsiæ. Commodus. A.D. 180–192.

Obv. ATT. K. AATP KOMOΔOC. Bust of Emp., right, laureate.

Rev. MHTPOIIHONTOT TMEOC. Asklepios standing, holding staff, round which serpent twines. In field, T. B.

3. Tomi, Mœsiæ. Julia Domna (?) Died A.D. 217.

Obv. Inscription illegible. Bust of Empress to right.

Rev. [MHTPOIIHON]TOT TOMEOC. Nikê advancing to left, holding wreath and palm.

4. Tomi, Mœsiæ. Caracalla. A.D. 211–217.

Obv. AKMAT ANTQNINOC. Bust of Caracalla to right, laureate.

Rev. NIHTPOIII ONTOMEOC. Female figure (city of Tomi) standing left, holding sceptre and cornucopiæ; at her feet, the sea-god "Pontus" swimming. In field, left, Δ.

* *Archæologia*, vol. xxxii. p. 454.

5. Tomi, Moesia. Caracalla. A.D. 211-217.

Obv. AKMAT ANTQNIN Bust of Caracalla to right.

Rev. MHTPONION TOMEQC. Roman eagle between two legionary standards. Beneath, Δ.

6. Tomi, Moesia. Caracalla. A.D. 211-217.

Obv. [A]KMATP ANTQNEINOC. Bust of Caracalla to right.

Rev. MHTPONONTOT TOME[Q]C. Car of Triptolemus drawn by serpents (serpents only visible) beneath the figure of a nymph.

7. Tomi, Moesia. Philip I. A.D. 244-249.

Obv. [AT]TMIOTA ΦΙΑΙΠΠOC. Bust of Philip right, laureate.

Rev. MHTPONOTOT TOMEQC. Concordia standing, left, holding patera and cornucopiae. In field (†).

8. Deultum, Thracia. Philip I. A.D. 244-249.

Obv. IMP MIVL[PHILI]PPVS AVG. Bust of Emperor radiate, right.

Rev. COL FL PAC DEVLΤ. Nemesis standing, left, holding staff and rhombus; at her feet a wheel.

9. Uncertain. Town illegible.

Obv. Bust of uncertain Emperor.

Rev. Nikê carrying wreath and palm, advancing, to right.

ROMAN COINS.

10. Trajan. A.D. 98-117. Large brass.

Obv. IMP CAES NERVAE TRAIANO AVG DAO PMTRP COSVPP. Bust of Trajan to right.

Rev. SPQR OPTIMO PRINCIPI. Dacia seated, left, in front of a trophy of arms. In the field, s c.

11. Tetricus. A.D. 270.

Obv. IMP TETRICVS . P . F . AVG. Bust of Tetricus, radiate, to right.

Rev. LAETITIA AVGG. Female figure (Lætitia) standing, left.

12. Tetricus. A.D. 270.

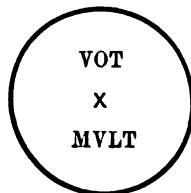
Obv. TETRICVS . P . F . AVG. Bust of Tetricus, radiate, to right.

Rev. SALVS AVG. Female figure standing, left, before a lighted altar.

13. Allectus. A.D. 296.

Obv. IMP C. ALLECTVS P. AVG. Bust of Allectus, right, radiate.*Rev.* VIRTVS AVG. Galley. Beneath, q c.

14. Magnentius (?) A.D. 303-353.

Obv. Illegible. Bust of Magnentius to right.*Rev.* Two Victories supporting a shield, inscribed

15. Antoninus Pius. A.D. 138.

Obv. DIVVS . AV . VSTVSVISPA . (?) Bust to right.*Rev.* Illegible.

In conclusion, I may say that these coins have been submitted to the Authorities at the British Museum, and that they are now in the possession of Messrs. Pierce (Kennaway and Co.), Palace Gate, Exeter.

THE CISTERCIAN HOUSES OF DEVON.

VI. FORD.

BY J. BROOKING ROWE, F.S.A., F.L.S.

(Read at Paignton, August, 1878.)

255. Up to the year 1842 the site of this Abbey, now a gentleman's mansion, was in the county of Devon. In that year the parish of Thorncombe, in which it is situated, was, by authority of Parliament, for the convenience of those having the transaction of magisterial and other business, transferred to the county of Dorset. There is therefore a necessity for including the history of Ford Abbey in this series of papers.

256. The Abbey was founded in 1141, and in point of date is the second Cistercian foundation in Devon. But the Annals of Waverley say, under date 1135, "*Forda fundata est quinto nonas Maii.*"* This, however, fixes the date of the migration of Richard and twelve monks from Waverley, the famous house before spoken of, to Brightley near Okehampton.

257. This is not the place to attempt to trace the parentage and descendants of Richard, stated in the Book of Ford Abbey to be the son of Baldwin de Brionne, and although the question has had brought upon it all the acumen and learning of Mr. Planché,† it is by no means settled. It is, however, clear that a Richard, connected with the great family of Redvers, made provision for Cistercian Monks at Brightley, and sent to Waverley for men to colonise the new house.

258. Richard the Monk and his companions had settled at Brightley only a few months when their patron died, 25th June, 1137. His death prevented his plans for the permanent establishment of the house of Brightley being carried into effect, and wanting not only friends, but the bare necessities of life in the barren spot in which the temporary buildings

* *Annales de Waverleia, Ann. Monast.*, vol. ii. p. 225.

† See *Earls of Devon, Collectanea Arch.*, vol. i. p. 263. *The Conqueror and his Companions*, vol. i. p. 44. On the Lords of the Isle of Wight, *Journ. Arch. Assoc.*, vol. xi. p. 217.

were placed, and having no hopes of being able to carry out the wishes of their would-be benefactor, the thirteen monks, after having lost their leader and Abbot, who had broken down in the struggle, resolved to abandon Brightley and to return to their old home. The five years attempt was a noble but a hopeless one,—*præ inopia et præ dira sterilitate victualiumque penura ibidem amplius morari non potuissent*,—and with sad memories and disappointed hopes they set their faces again towards Waverley.

259. They had proceeded on their journey as far as Thorncombe when Adelicia, the sister of Richard the Viscount, met them. The chronicler quoted by Dugdale gives the very words of Adelicia when she saw the monks walking two and two with uplifted cross, as five years before they had set out from Waverley. “*Absit a me, domini et patres sanctissimi, opprobrium tam damnable et ignominiosum periculum, ut quod dominus meus et frater Ricardus pio devotionis affectu ad Dei honorem nostrumque omnium salutem tam solempniter quam salubriter inceperat, ego vero soror ejus, et heres cui decedendo omnia tradidit in manus, non velim aut valeam ad debitum perducere effectum. Ecce manerium meum in quo jam consistimus fertile satis et nemorosum ac abundans frugibus, quod vobis in excambium pro terra sterili de Brightleia cum tota mansione nostra et domicilio imperpetuum donamus. Manete hic donec alibi in ista possessione vobis competentius fit monasterium, nec vobis in hoc deesse possumus, sed satis juvabimus ad construendum.*” The fruitful and well-wooded manor which Adelicia offered the monks was that of Thorncombe, and the proffered gift induced them to change their plans and accept the lands for a new foundation.

260. The house called Westford, which accompanied the gift of the manor, was taken possession of, and there the wanderers lived until the completion of the larger and more convenient buildings. It was resolved that their site should be Hertbath (*Balneum cervorum*) and the erection of the church was at once commenced.

261. Scarcely had the new arrangements been completed when the monks sustained another loss. In September, 1142, Adelicia died, and was buried within the precincts of the church, although at this time little progress could have been made with it. The remains of Richard the Viscount and Richard the Abbot were removed from Brightley, and buried before the place of the high altar in the slowly rising church. The Abbey was soon known as Ford, taking this name from

a passage-way over the River Axe, near which it was situated.

262. The first Abbot was succeeded by Robert de Penynnton, or Penigton, as we find it sometimes spelt, and who, as his name occurs in deeds under dates so far apart as 1137 and 1168, must have ruled the house for many years. It is very probable that the conventual buildings were completed in his time, and the remains of the two Richards removed from Brightley to Ford.

263. The third Abbot was Baldwin of Exeter. Originally a monk at Ford, he, in the course of a short time, became Abbot, and about the year 1181 was made Bishop of Worcester, and not long after Archbishop of Canterbury, and his life in consequence becomes a part of the history of our country.

264. Of the next Abbot, Robert, we know nothing. During his time, or in that of his successor, Maurice Somerset was a monk here, and, his writings obtaining him celebrity at Oxford, he was made Abbot of Wells.

265. John, the Confessor of the King of the same name, formerly Abbot of Bindon, succeeded Robert, and made Ford famous for its learning. He was a great theologian and was Abbot from 1191 to 1220.

266. Another John followed,* and was Abbot until 1236. We have from the Feet of Fines some entries in which his name is mentioned.

Hec est finalis concordia fca in Curia dñi Reḡ apud Westm̃. In Octab̃ Purificaōis anno regni Reḡ Henr̃ fit Reḡ Joh̃is vicesimo p̃mo Coram Rob̃o de Lexintoñ Willelmo de Ebor̃ Ada fit Willelmo de Colew̃rth Justic̃ et aliis dñi Reḡ fidelibz tūc ibi p̃sentibz Inḡ Galfridū de la Pomeray petentem p̃ Hug̃ de la Huff positū loco ip̃ius Galfr̃ ad lucrandū ut per dendū et Joh̃em Ab̃bem de Forde tenētem de tribz Carucatis p̃re cū p̃tñ in Tale vnde placitū fuit inḡ eos in ead̃ Cur̃ Scilicet qd̃ p̃dcus Galfr̃ remisit et quietū clamavit de se et hereditibz suis p̃dco Abbi et successoribz suis et Ecc̃ie sue de Forde totū Jus et clamiū quod habuit in tota p̃dca tra cū p̃tñ imp̃petuū. Et p̃ hac remissione quietā clamancia fine et concordia idem Abbas dedit p̃dco Galfr̃ quinquaginta et tres m̃rcas argenti.—Feet of Fines. Devon. Henry III. No. 196.

Hec est finalis concordia fca in Cur̃ dñi Reḡ apud Exoñ a

* But see *Annals of Waverley* under date 1234.

die s̄ci Joh̄ Bap̄ in quindecī dies anno regni Reḡ Hen̄r fit Reḡ Joh̄ vicesimo s̄do Coram Wiffo de Ebor̄ Rob̄to de Bello Campo Wiffo de S̄co Edmundo ⁊ Jordano Oliū iustic̄ itin̄antibz ⁊ aliis dñi Reḡ fidelibz tūc ibi p̄sentibz In̄ Clariciā fit Radi petentem ⁊ Joh̄m Abb̄m de Ford̄ tenente de Dimid ferlingo t̄re cū p̄tiñ in Stok Vnde assisa mortis antecess̄ sumonita fuit in̄ eos in eadem Cūr scit̄ qd̄ p̄dca Clariç recognouit totā p̄dcam t̄rā cum p̄tiñ esse ius ip̄ius Abb̄is ⁊ Ecc̄sie sue de Ford̄ Habend̄ ⁊ tenend̄ eidem Abb̄i ⁊ suc̄c̄ suis ⁊ Ecc̄sie sue p̄dce de p̄dca Clariç ⁊ heredibz suis inppetuū reddendo inde annuatim vnū deñ ad festū s̄ci Mich̄ p̄ om̄i seruiçō ad ip̄am Clariç ūl ad hedes suos p̄tinētē Et acquietando totā p̄dcam t̄rā cum p̄tiñ ūs^o Capitales dños feodi ill^o de om̄ibz aliis seruiç̄ ad eandem t̄rā p̄tinentibz. Et p̄ hac recogniçione fine ⁊ cōcordia Idē Abbas dedit p̄dce Clariç duas Mar̄c argēti.—Ibid. No. 219.

Hec est finat̄ concordia f̄ca in Cūr dñi Reḡ apud Exon̄ a die s̄ci Joh̄ Bap̄ in quindecī dies Anno Regni Reḡ Hen̄r fit Reḡ Joh̄is vicesimo s̄do Corā Wiffo de Ebor̄ Rob̄to de Bello Campo Wiffo de s̄co Edmundo ⁊ Jord̄ Oliū iustic̄ itin̄antibz ⁊ aliis dñi Reḡ fidelibz tūc ibi p̄sentibz In̄ Thom̄ de Ford̄ ⁊ Petroniſt v̄x̄em ei^o petētes ⁊ Joh̄m Abb̄m de Ford̄ tenentē de t̄cia pte vini^o ferlingi t̄re cū p̄tiñ in Stoke. Quā t̄ciā pte p̄dci Thom̄ ⁊ Petronilla clamabant esse r̄onabilē dotē ip̄ius Petronille q̄ eam contingebat de lib̄o tenemēto qd̄ fuit Radi fit Riç quondam viri sui in eadem villa. Et vnde placitū fuit in̄ eos in ead̄ Cūr scit̄ qd̄ p̄dce Thom̄ ⁊ Petronilla remiſrunt ⁊ quief̄ clamaūnt de se eidem Abb̄i ⁊ successoribz suis ⁊ Ecc̄sie sue de Ford̄ totū ius ⁊ clamiū quod h̄unt in tota p̄dca t̄cia pte cū p̄tiñ nōie dotis inppetuū. Et p̄ hac remissione quieta clamanç fine ⁊ concordia idem Abbas dedit p̄dcis Thome ⁊ Petronille Duas Mar̄c Argēti.—Ibid. No. 254.

Hec est finat̄ concordia f̄ca in Cūr dñi Reḡ apud Exon̄ in Octab̄ s̄ci Joh̄is Bap̄ Anno Regni Reḡ Hen̄r fit Reḡ Joh̄is vicesimo s̄do Corā Wilto de Ebor̄ Rob̄to de Bello Campo Wilto de s̄co Edmundo ⁊ Jordano Oliū iustic̄ itin̄antibz ⁊ aliis dñi Reḡ fidelibz tūc ibi p̄sentibz. In̄ Symonē de Pylesdon̄ petentē ⁊ Joh̄m Abb̄m de Forde tenentē de duabz Carucatis t̄re cū p̄tiñ in Lefford̄ ⁊ in Cundebuſ vñ placitū fuit in̄ eos in eadem Cūr scit̄ qd̄ p̄dict^o Symō remisit ⁊ quief̄ clamauit de se ⁊ heredibz suis ip̄i Abb̄i ⁊ successoribz suis ⁊ Ecc̄sie sue de Forde totū ius ⁊ clamiū quod habuit in tota p̄dca t̄rā cū p̄tiñ inppetuū. Et p̄ hac remissione quieta clamanç fine ⁊ con-

cordia idē Abbas dedit p̄dco Symoni q̄“tuordecī marē ⁊ dimid argēti. Et si p̄dict⁹ Symō ut hēdes sui deceſo aliq̄s Cartas ut aliq̄ munimēta ūs⁹ p̄dcm Abb̄m ūl succ̄ suos q̄“ntū ad p̄dcas duas Carucatas t̄re cū p̄tiñ in p̄dcis villis cont̄ hūc finē p̄tulerint p̄ nullis penit⁹ habebunt⁹.—Ibid. No. 283.

267. Roger succeeded, in whose abbacy the church was completed, for under date 1239, in the Annals of Waverley, we have “Ecclesia de Forda dedicata est a domino Willelmo Exoniensi episcopo.” John de Warwick followed, then Adam, who became Abbot in 1240, and William, who died and was buried at Waverley.

Hec est final concordia fca In cuſ dñi Reġ ap̄ Exon̄ a die s̄ce Tniſ in q̄ndeci dies ann̄ Regñ Reġ Henr̄ fit Reġ Joh̄ vicesimo octavo. Corā Johe Abbe de Schyreburi Rogo de Thurkelby Giltō de P̄ston̄ ⁊ Robto de Bello campo Justiĉ Itin̄antibz ⁊ aliis dñi Reġ fidelibz tūc ibi p̄sentibz Inſ Abb̄m de Ford̄ queſ ⁊ Riĉ de Laya deforĉ de secta q̄“ Idē Abbs exiġ ab eodem Riĉo vnde Idem Abbs exigebat qđ faciet ei sectā de t̄bz sept̄ in tres septim̄ ad Hundr̄ suū de Thornecūbe, Et vnde plac̄ fuit Inſ eos in eadem cuſ. Sciit qđ p̄dc̄s Riĉ recogn̄ ⁊ concessit p̄ se ⁊ hēdibz suis qđ ip̄i de cetō faciant bis p̄ annū sectam p̄dcm Hundr̄ siml̄ cū libis homibz suis ⁊ cū suo capitā Thedingman ⁊ duobz aliis homibz sciit semel sabto pximo p̄t Hokeday ⁊ Itum sabto p̄x p̄t festū s̄ci Michis. Ita in qđ p̄dc̄s Thedigman cū p̄dc̄is duobz hoibz ad p̄dc̄os duos dies mōst⁹ re debet oīa plac̄ de Thedinga ip̄i⁹ Riĉi ⁊ hēd suos ad p̄dcm Hundr̄ p̄tinenĉ ⁊ si aliq̄s ip̄oz q̄“ Ita seq̄ deb̄t ad p̄dc̄os duos dies fuit in defalt̄ Id Abb̄ ⁊ succ̄ sui oīa ip̄oz amciañta Integre habnt ⁊ oīa alia amciañta de homibz ip̄i⁹ Riĉi ⁊ hēd suos ad eundē Hundr̄ contingēc Inſ p̄dcm Abbem ⁊ succ̄ suos ⁊ p̄dcm Riĉm ⁊ hēd suos fidelit̄ dimidiabunt⁹ ⁊ oīa illa amciañta taxari debent p̄ p̄dcm Abb̄m ⁊ succ̄ ut Baltos suos ⁊ p̄ p̄dcm Riĉm ⁊ hēdes ut att̄natos suos. Et p̄tea Idem Riĉ concessit p̄ se ⁊ hēd suis qđ si aliqđ plac̄ fuit in eodem Hundr̄ p̄ Brē dñi Reġ ut latro fuit ibi Judicand̄ ip̄i ut att̄nati sui sequi debēt Hundr̄ ip̄i⁹ Abbs de Tbz sept̄ In tres sept̄ vsq̄ loquela illa p̄ Judm̄ eiusdem Hundr̄ plena fuit t̄m̄iata. Et p̄ hac reĉ concessione fine ⁊ cōcordia. Idem Abbs reñ ⁊ q̄eſ clam̄ de se ⁊ succ̄ suis ⁊ Ecc̄ia sua de Forde p̄dco Riĉo ⁊ hēd suis oīa arreragia ⁊ oīis alias sectas q̄s ab eodē Riĉo exigibat ⁊ oīa dampn̄ que dicebat se hūisse occasione sub⁹ccōis p̄dco secte usq̄ ad diem quo hec concordia fca fuit.—Feet of Fines. Henry III. No. 316.

Hec est finat concordia fca in Cuř Dñi Reġ apud Exoñ a die sçe Trinitatis In qñdecim dies anno regni Reġ Henř fit Reġ Johis vicessimo octavo coram Johie Abbte de Schryreburñ Rogo de Thurkelby Gilbto de Preston 7 Robto de Bello Campo Justic Itinñantib; 7 allis dñi Reġ fidelib; tuc ibi pñsentib; In Adam Abbem de Forde queř pñrem Wiřm Monachũ suũ poĩtum loco suo ad lucũndũ uř pdendũ 7 Huġ Peucl de Ermintoñ deforẽ de annuo rediditu decem libř Cere vnde Idem Abbs questus fuit qđ decem libre eiusdem redditus ei aretro fuerũt de vno anno. Et vnde placitũ fuit inř eos in eadem Cuř scitt qđ pdcs Huġ recognouit 7 concessit eidem Abbtĩ decem libř Cere p annũ; peipiendas ipĩ Abbtĩ successorib; suis de Molendino de Ermintoñ p manũ Balti ipĩus Huġ 7 hedum suoř de Ermin-toñ ad festũ sçi Michis apud Exoñ inppetũ. Et p hęc recognĩ concessione fine 7 concordia Idem Abbs remisit 7 quiet clañ de se 7 sucẽ suis eidem Huġ 7 hed suis omĩa arreragia pdci redd pdcar decem libř Cere vsq; ad diem quo hec concordia fca fuit.—Ibid. No. 328.

268. William of Crewkerne was the tenth abbot, and his time was famous for the great dispute between him and Bishop Bronescombe, the particulars of which are detailed by Oliver, and the documents given at length in the appendix to the *Monasticon*. His name occurs in the following legal proceedings:—

Hec est final concordia fca In cuř dñi Reġ apud Exoñ In Octab sçe Trinitatis Anno regni Reġ Henř fit Reġ Johis Tricesimo tercio Corā Rogo de Thurkelby Gilbto de Prestoñ 7 Johie de Cobbeh Justic Itinñant 7 aliis dñi Reġ fideř tuc ibi pñsentibus In Radm de Trewurtheth peřn 7 Adam Abbem de Laforde teñ de vno ferlingo ĩre 7 dimid cũ ptiñ in Opecote. Unde plač fuit inř eos in eađ Cuř Scitt qđ pdcs Rads reñ 7 quiet clañ de se 7 hed suis pdco Abbtĩ 7 sucẽ suis 7 Eccie sue de Forde totũ Jus 7 clamiũ qđ hũit in pdca ĩra cũ ptiñ imppeř. Et p hęc reñ quiet clañ fine 7 conč Idem Abbas dedit pdco Rado duas Mcas argñti.—Feet of Fines. Henry III. No. 435.

Hec est finat concordia fca in cuř dñi Reġ apud Westm In Octab sçi Hillař anno regni Reġ Henř fit Reġ Johis qñquagesimo sçdo Coram Mçrtino de Litlebiř Magro Rogo de Seytoñ 7 Johie de Cobbeh m Justic 7 aliis dñi Reġ fidelib; tuc ibi pñsentib; In Magřm Thoř de Wymundeh m psonam Eccie de Pahambiř peřn 7 Wiřm Abbem de fforde tenetẽm

de vno fferlingo ⁊ vna acra lre cum ptiñ in Tale. vnde Jurata vtrum p̄dca terra cū ptiñ sit liba elemosina p̄tinēs ad p̄dcam Eccliam an laicū feodū ipius Abbis suū fuit int̄ eos in eadē cur̄. Scitt qd p̄dcs Abbs recogn̄ p̄dcam lram cū ptiñ esse Jus p̄dce Ecclie ⁊ p̄dcm ferlingū terre cū ptiñ ei reddidit in eadem cur̄ ⁊ remisit ⁊ quieteclam de se ⁊ suc̄ suis ⁊ Ecclia sua de fforde p̄dco Thoñ ⁊ suc̄ suis psonis p̄dce Ecclie ⁊ Ecclie p̄dce Inppef. Et p hac recogn̄ reddicōne remissioe q̄eta clam̄ fine ⁊ cōcordia. Idem Thoñ cōcessit p̄dco Abbi p̄dcam acram terre cū ptiñ. Hañ ⁊ Tenend̄ eidē Abbi ⁊ suc̄ suis ⁊ Ecclie sue p̄dce de p̄dco Thoñ ⁊ suc̄ suis psonis p̄dce Ecclie ippef. Reddñ inde p anñ vnū clauū Gariophili ad Pasch p omī suicō cons ⁊ exacōne. Et hec cōcordia fca fuit ex assensu ⁊ volūtate Wal̄i Ep̄i Exon ⁊ eam concedentis. —Ibid. No. 603.

¶ Abbas de Forde suū fuit ad respond̄ dño Regi de p̄ito quo Waranto clam̄ h̄re vis franc̄ pleḡ emend̄ assise panis ⁊ c̄vis fracte fur̄ in Kentesbery ⁊ Thornecombe sine licen̄ ⁊c.

At Exeter.
Octave of St.
Martin.
9-10 Edw. I.
A.D. 1281.

Et Abbas p Atorñ suū venit Et quo visum f̄nci pleḡ in Kentesbyf dīc qd nich̄ inde clam̄ Et quo ad emend̄ ass̄ panis ⁊ c̄vis f̄cte ⁊ fur̄ in eadem villa. Et quo ad emend̄ ass̄ panis ⁊ c̄vis f̄cte fur̄ ⁊ visum f̄nci pleḡ in Thornecombe dicit qd ipse ⁊ omnes p̄dēc sui a t̄pe quo nō exstat memoř hūunt emend̄ ass̄ panis ⁊ c̄vis in Kentesbyf ⁊ visum f̄nci pleḡ ⁊ emend̄ ass̄ panis ⁊ c̄vis f̄cte In Thornecombe p̄f qd inquirat.

Et Wits de Gyselh^m qui sequi^r ⁊c Dīc qd huj^m mō libtates spalit̄ ptinent ad Coronam dñi Regis Et desīc nullū Wař inde ostend̄ de dño Rege p̄f Judm.

Dies dat^o est coram dño Rege a die Pasch in unū mensem ubicūq; ⁊c de aud̄ judicō.

Assize Roll Devon $\left. \begin{array}{c} M \\ 1 \\ 34 \end{array} \right\} 1 \text{ Memb: } 20d.$

269. Nicholas, who was blessed at Axminster 1st Jan. 1283, by Bishop Quivill, followed. William de Fria succeeded, and, having been able to be of great use to the Convent, was persuaded to resign it for Newenham, where similar services were much needed. However he remained there only about four years, when he returned to Ford, and resumed his place as a simple monk. Dying at Ford, his body was removed to the Abbey he had evidently loved so well, for interment.

270. Henry took the place of William de Fria on his resignation, and was Abbot until 1319. The grant of the fair at Thornecombe, which was continued down to the year 1770, I give from the Charter Roll.

p' Abbe et
Conventu de
Forda.

Dated 5 Feb.
1312-13.

R Archiep̃is ⁊ t̃c. sal̃m. Sciatis nos concessisse ⁊ hac carta ñra confirmasse dit̃cis nob̃ in x̃po Abbati ⁊ Conventui de Forda q̃d ip̃i ⁊ successores sui imp̃p̃m h̃eant unū mercatū sing̃tis septimanis p̃ diem mercurii apud maneriū suū de Thornecūbe in Cõm̃ Devon, et unā feriā ibidem sing̃tis annis p̃ sex dies duraturam videt̃ in die martis in septimana Pasche, et p̃ quinq̃ dies sequentes. Nisi m̃catū illud ⁊ feria illa sint ad nocumentū vicinor̃ mercator̃ ⁊ vicinar̃ feriaz. Quare volum⁹ ⁊ firmit̃ p̃cipim⁹ p̃ nobis ⁊ hereditibz ñris q̃d p̃d̃ci Abbas ⁊ Conventus ⁊ successores sui imp̃p̃m h̃eant p̃d̃ca mercatū ⁊ feriam apud Mañiū suū p̃d̃cm cum omnibz lib̃tatibz ⁊ lib̃is consuetudinibz ad hujusmodi mercatū ⁊ feriā p̃tinentibz. Nisi m̃catū illud ⁊ feria illa sint ad nocumentū vicinor̃ mercator̃ ⁊ vicinar̃ feriaz sicut p̃d̃cm est. Hiis testibz veñabilibz p̃ribz W. Wigorñ. W. Exoñ Ep̃is Gilbto de Clare Comite Glouc̃ ⁊ Hertford̃ Adomaro de Valencia Comite Pemb̃r Hug̃ le Despens̃ Wiffo le Latimer. Nicho de Seg⁹ ve ⁊ aliis. Dat̃ p̃ manū ñram apud Windaes̃ quinto die Feb̃r p̃ finē contentū in alia carta inferius.*—Charter Roll 6 Edward II. No. 106, mem. 17, section 36.

R omnibz ad quos t̃c sal̃m. Sciatis q̃d cum p̃ tras ñras patentes concesserim⁹ ⁊ liceñc dederimus p̃ nobis ⁊ h̃er̃ ñris quantū in nobis est dil̃cis nob̃ in x̃po Abbi ⁊ Conventui de fford̃ q̃d ip̃i decem libratas t̃raz t̃en ⁊ redditū de feodo suo p̃prio adquirere possint h̃end̃ ⁊ t̃ened̃ sibi ⁊ suc̃c̃ suis imp̃petuū Statuto de t̃ris ⁊ t̃eñ ad manū mortuam t̃c put̃ in t̃ris p̃d̃cis plenius continet̃. Nos volentes concessionē ñram p̃d̃cm debito eff̃cui mancipari concessim⁹ ⁊ lic̃ dedim⁹ p̃ nob ⁊ h̃er̃ ñris quantū in nobis est Wiffo de Pillaunde ⁊ Nichs Portebref q̃d ip̃i vnū m̃es vnū molendinū Triginta acras t̃re tres acras p̃ti ⁊ tres ac̃r more ⁊ alneti cum p̃tiñ in Wheteham ⁊ Burghstok̃ et Thome de Langedoñ q̃d ip̃e vnū m̃es duodecim ac̃r t̃re ⁊ tres ac̃r bosci cum p̃tiñ in Thornecōbe et Wiffo de Wateleg̃h q̃d ip̃e viginti ⁊ tres ac̃r t̃re ⁊ duas ac̃r alneti cum p̃tiñ in Wateleg̃h iuxta Wynesham que de p̃d̃cis Abbe ⁊ Conventu† ⁊ que valent p̃ annū in omnibz exitibz iuxta verū va-

* This is No. 26 on the same Roll, being a Confirmation of a Charter of King John granting the church of Tormecumbe, &c., &c. Dated 10 Oct in the tenth year of his reign. Confirmation dated 5 Feb. (as above).

† "tenentur" omitted.

lorem eozdem quatuordecim solidū ⁊ quatuor denarū sicut p inquisiōes p delēm cūcum nrm Magrm Johem Walewayn Escaeñ nrm cit^{ur} Trentam de mandato nro fcas ⁊ in Cancellañ nra retornatas comptū est dare possint ⁊ assignare eisde Abbi ⁊ Conventui hēnd ⁊ tenēd sibi et succē suis imppetuū in pte satisfaciōis decē libratarū Pre teñ ⁊ reddituū pdcōrū. Et eisde Abbi ⁊ Conventui qd ipi pdcā mes Molen- dinū tram p^{er} tūm boscum moram ⁊ Alnetū cum ptiñ a pfatis Wiffo Nicho Thoma ⁊ Wiffo recipe possint ⁊ tenere sibi ⁊ succē suis pdcīs imppetuū sicut pdcū est tenore pscenciū simili^{ter} licenē dedimus spālem Statuto pdcō non obstante. Nolentes qd pdcī Wiffs Nichs Thomas ⁊ Wiffs vel heredes sui aut pfati Abbas ⁊ Conventus seu succē sui rōne statuti pdcī p nos vel hēf nros inde ocōnent^{ur} molestent^{ur} in aliquo seu g^{er}vent^{ur}. Salvis tamen Capitalibz dnis feodi illius sviciis ⁊c. In cui^{us} ⁊c. T. R apud Westm. xxv. die Octobr.—Patent Roll 11 Edw. II. pars 1, m. 21.

271. William, who patronised Charmouth, was confirmed 22 Sept. 1219. His successor John appears to have undertaken the repairs of the buildings of his house, then become dilapidated judging from his reply to Bishop Grandisson, who asked for a money grant to enable him to comply with the large demand of the Court of Rome. John replied that his buildings and his church were ruinous, and with great humility begged that the Abbey might not be called upon to contribute to the subsidy. Still he seems to have acquired land for the house, as the following from the Patent Roll shows:—

R^{ex} omibz ad quos ⁊c sttm. Sciatis qd cum de grā nra p^{er} spāli p litt^{er}as nras patentes concesserimus ⁊ licenciam dederimus p nobis ⁊ heredibz nris q^{uod}ntum in nobis est dilcis noñ in Xpo Abbati ⁊ conventui de fforde qd ipi decem libratas t^{er}raz tenementoz ⁊ reddituum de feodo suo pprio adquirere possint hēnd ⁊ tenēd sibi ⁊ successoribz suis imppetuū. Statuto de Tris ⁊ teñ ad manū mortuam non ponēd edito non obstante, put in lit^{er}is pdcīs plenius continet^{ur} nos volentes concessionem nram pdcām debito effectui mancipari concessimus ⁊ licenciam dedimus p nobis ⁊ heredibz nris q^{uod}ntum in nobis est Wiffo de Pillaunde ⁊ Nicho Portebrief qd ipi quinquaginta acras tre ⁊ viginti acras more cum ptiñ in Watelegñ que de pdcīs Abbate ⁊ conventu tenent^{ur} ⁊ que valent p annuū in omibz exitibz iuxta veram valorem eozdem quindecim solidū ⁊ decem denarū sicut p inquisiōem p dilēm cūcum nrm Magrm Johem

p Abbate de fforde.

Walewayn nup Escaetorem nřm vltra Trentam de mandato nřo inde fřam ři in Cancellariř nřa retornatam est comptum dare possint ř assignare eisdem Abbati ř conventui habend ř tenend sibi ř successoribz suis imppetuř in ptem satisfaccois decem librataz řraz tenř ř reddituř pdcoz. Et eisdem Abbati ř conventui qđ ipi řram ř morā pdca cum ptiř a pfatis Witto ř Nicho recipe possint ř tenere sibi ř successoribz suis pdcis imppetuř sicut pdcm est tenore psencium similiř licenceiam dedim⁹ spřalem statuto pdco non obstante. Nolentes qđ pdci Witto ř Nichus vel heř sui aut pfati Abbas ř conventus seu successores sui řone statuti pdci p nos vel heř nřos inde ocořnent^r in aliquo seu gřvent^r. Salvis tamen capitalibz dnis feodi illius řviciis inde debitis ř consuetis. In cui⁹ řc. T. Rę apud Eboz. xxx. die Dec.—Patent Roll, 13 Edw. II., m. 24.

272. John de Chidley succeeded John, 24 June, 1330, and seems, although his reputation did not stand high, to have had several legal matters upon his hands in connection with the property of the Abbey.

Devoř.

Johnes Abbas de fforde p atř suř op. se iiij die řsus Ranulphř Blaunmoster ř Alič vřem eius Ričm de Combe ř Walřm de Edyngton de plito q^rre ceřnt aulia ipius Abbis ř ea iniuste detinuēř cont^r vadiř ř pleğ řc Et ipi nō veř Et hueř inde dič hic ad hunc dič ex pficcoē řc Judř attach qđ sit hic in Octab řci Mičhis řc.—De Banco Roll, Easter 17 Edw. III. memb. 26d.

Devoř.

Abbas de fforde p Johem de Crukerř atř suř op. se iiij die řsus Henř de řco Claro vicariř ecclie de Brodewyndesore de plito qđ reddat ei řonabilem comptuř suř de tempe quo fuit receptor denař ipius Abbis řc Et ipē nō veř Et sicut pluř preč fuit vič qđ cař eř řc Et vič modo mand qđ nō est inuent⁹ řc I'o sicut pluř preč est vič qđ cař eř si řc Et saluo řc Ita qđ heat corpus eius hic a die řce Trinitař in xv dies p Justič řc Et vič sit řc.—Ibid. memb. 88.

Devoř.

Abbas de fferde p Ričm Beynyn atř suř op se iiij die řsus Johem de Clopton de plito qđ redd ei řonabilem comptuř suř de tempe quo fuit receptor denař ipius Abbis řc Et ipē nō veř Et pč fuit vič qđ cař eř si řc Et vič modo mād qđ nō est inuent⁹ řc I'o sic p'us preč est vič qđ cař eř si řc Et saluo řc Ita qđ heat corpus eius hic a die řce Tnitatis in xv dies p Justič řc Et vič sit řc.—Ibid. memb. 145.

Ideř Abbas p pdcm atř suř op. se iiij. die řsus Robřm

Ilmystre ⁊ Adam Rogge de p̃lito q̃re vi ⁊ armis decem boues ⁊ q̃tuor vaccas ip̃ius Abbis p̃cii decem marcaꝝ apud Tale inventos cepūt ⁊ abduxerunt ⁊ alia enormia ei intuleꝛ ad g̃rue dampnū ip̃ius Abbis ⁊ cont̃m pacē ⁊c Et ip̃i nō veni Et p̃c fuit viç q̃d cap̃ eos si ⁊c Et viç modo mand̃ q̃d nō sūt inuenti ⁊c I'o siç p̃ius preç est viç q̃d cap̃ eos si ⁊c Et saluo ⁊c Ita q̃d heat corpa eoꝝ hic ad p̃fatū t̃minū p̃ Justiç ⁊c Et viç sit ⁊c.—Ibid. memb. 145.

273. Adam was confirmed Michaelmas-day, 1354. Abbot John did not undertake the repairs of the church, whatever he might have done to the other buildings, for we find that about this time the edifice required rebuilding. The following extracts from the White Book of Tenures are interesting:—

Octobre Novembꝛ lan Dengt xxix
Edward ⁊c. A nos ch̃s vadletꝝ Robt de Eleford ñre Señ de Corñ ⁊ Devenes ⁊ Johan de Skirbeekꝝ gardein de nos feodꝝ illeoq̃s ⁊ a vn de eux saluꝝ. N're ch̃ en dieu Abbe de fforde no^s ad moustree p̃ sa peticion a ñre conseil grevouement compleignant q̃ vous ñre dit feoder lui destreigneꝝ de iour en autre p̃ relief a no^s paier ⁊ seute faire a ñre Court de Bradenessh p̃ c̃teines t̃res ⁊ teñꝝ es villes de lynton Countesbury ⁊ looford en Countee de Devenes queles il tient a ce qil dit en pure ⁊ p̃petuelle aumoigne, et en affermance de son estat en cele p̃tie si ad il moustree devant ñre conseil vn fait p̃ quel Gueras * de Pilesdoñ g̃unta ⁊ p̃ sa chartre conferma a leglise ñre dame de fforde ⁊ as Moignes illeoq̃s dieu svantz la t̃re de lefford ⁊ la t̃re de Cuntebury ove ses app̃tenances ensemblement ove lewe pentre Cuntebury ⁊ lynton quele ewe il retynt deṽs lui p̃ t̃me de sa vie la reṽsion au dit Abbe. A teniꝛ en pure ⁊ p̃petuelle Aumoigne quel doun Henri Tracy filz Wiñ Tracy conferma p̃ sa chartre ⁊ et auxi vne chartre p̃ quele Heñr filz au Counte dona a dieu ⁊ ñre dame de fford ⁊ as Moignes illeoq̃s dieu svantz la t̃re de Cuntebury ⁊ lynton ove touz ses app̃tenances. A tenir de lui ⁊ de ses heirs en pure ⁊ p̃petuelle aumoigne quits de toutes mañes seculers svices ⁊ demandes en mañe come Heñr de Tracy g̃unta meisme la t̃re as ditꝝ Moignes empriant q̃ no^s lui veuilliens s̃ ce faire droit p̃ quei p̃ avis de ñre conseil vous maundons q̃ vous c̃tifieꝝ ñre conseil a lond̃s quel estat no^s avons en la s̃cie des dites t̃res. Et faceꝝ diligealement enquerre p̃ quel svice le dit Gueras qi p̃mes enfeoffa le dit Abbe tynt les dites t̃res de Heñr de Tracy ou dautre coment ⁊ en quele

Cornewaille.
Touch' l'abbé
de fforde.

* Written (fo. 64) "Gervey's."

† Oliver, p. 347.

mañe, et si le dit Abbe tiegne auñs ðres ⁊ teñz es dites villes q̃ ne sont comp'ses en les ditz faitz adonq's quelles ðres ces sont ⁊ de q̃i ces sont tenuz ⁊ p̃ queux s'vices Et ent ɔtifiez ñre conseil entre cy ⁊ la xv de saint Hillair p'sch avenir. Et chargeons vous ñre dit feoder q̃ vo^s s' seiez de la destresce quele vous faites vs le dit Abbe p^r les choses devantdites entre cy ⁊ la dite xv. Et ce ne lessez. Doñ ⁊c a Westm̃ le xxix iour Doctob^r lan xxix.

p ⁊ lev[e]sq; de Wynč ⁊ p bille endossee

p Skipwith.

The White Book of Tenures in Cornwall, 25—39 Edw. III., fol. 58.

* * At fo. 64 a letter of the Prince, dated at London, 11 July, 30 E. III., that Robert de Eleford has fully certified to the Council as to the matters above ordered, and directing inquiry to be made "si no^s eous lestat le dit mon^s Henri de Tracy en dit Manoir ou del vn ⁊ del autre."

Juył

lan xxxj. As audito^rs

Cornewaille.
Touch' les
Abbe et
Covent
de fforde.

des accomptes de noz Ministres saluz. Coment no^s feismes ore tard s' veer ⁊ examiner p les sages de ñre conseil les enquestes p'ses a ñre maundement devant Robt de Elford ñre Señ de Cornewaill ⁊ Devenex ⁊ Johan de Shirbeñ; Gardein de noz feod; illeoq's ⁊ devant ñre dit conseil ret^{re}neer touch labbee ⁊ covent de fforde avis estoit a ñre dit conseil q̃ p^r rien q̃ feust Adonq's trove no^s ne deyvous seute nautre s'vice de eux demander p reson de ðres comp'ses en mesmes les enquestes si mandasmes p noz auñs ðres a noz dit; Señ ⁊ Gardein de feod; qils ne destreignassent les dit; Abbe ⁊ Coven p cause des dites ðres contre reson a ce q̃ semble vous mandons p avis de ñre dit conseil q̃ s' la compte du dit Johan lui face; descharger de la soñe susdite. Et ceste ðre vo^s ent s'ra garř. Doñ ⁊c a lond^s en lostiel levesq, Dely le xj iour de Juył lan ⁊c xxxj ⁊c.—Ibid. fol. 76.

274. John Chyllheglys seems to have succeeded Adam. He was Abbot in the year 1373. His successor, Walter Burstok, was confirmed 16 April, 1378. The proceedings referred to in the following extracts occurred in his time.

Som's.

¶ Abbas de fforde p Johem Crukerñ aŕt suū op. se iiij^{to} die vsus Adam Hodeforde de pito qđ reddat ei quadraginta ⁊ duos solid quos ei debet iniuste detinet ⁊c Et ipe non venit Et pē fuit viē qđ suū eū Et viē modo mand qđ nichil hēt

J'o p̄c̄ est viç qđ capiat eū si t̄c̄ Ita qđ heat corpus eius hic a die s̄c̄e Trinitatis in xv dies p̄ Justiç.—De Banco Roll, Easter 9 Rich. II. m. 104d.

¶ Abbas de fforde p̄ Johem Crukerñ attorñ suū op. se iiij^{to} die vsus Robtum Cornu Chiuale de p̄ito qđ reddat ei quadraginta solidū quos ei debet t̄ iniuste detinet t̄ Et ipe non venit Et sicut pluř fuit dist̄r p̄ catalla ad valenç duoz solidū Et m̄ p̄ Johem Hunt t̄ Henř Hiff J'o ipe in m̄ia Et sicut pluř dist̄r qđ sit hic a die s̄c̄e Trinitatis in xv dies p̄ Justiç.—Ibid. m. 151.

Devoñ.

¶ Abbas de fforde p̄ Johem Crukerñ att̄ suū op. se iiij^{to} die vsus Thomā Kernere t̄ Elenā v̄x̄em eius t̄ Wiltm fit eor̄z̄d̄ Thome t̄ Elene de p̄ito quare cū de cōi consilio regni Regis Angl̄ puisū sit qđ non liceat alicui vastū vendicōem seu destruccōem face de t̄ris domibz boscis seu gardinis sibi dimissis ad t̄minū vite vel annoz iidem Thomas Elenā t̄ Witto de t̄ris domibz boscis t̄ gardinis in Thorncombe que Johes de ffar-yngdoñ nup Abbas de fforde p̄decessor p̄d̄ci nunc Abbis eis dimisit ac vitā ipoz Thome Elene t̄ Witi fecerunt vastū vendicōem t̄ destruccōem ad exheř eccl̄ie ipius nunc Abbis be Marie de fforde t̄ cont̄ formā puisionis p̄d̄ce t̄c̄ Et ipe non veñ Et p̄c̄ fuit viç qđ dist̄r qđ eos Et viç modo mand̄ qđ b̄re adeo tarde t̄c̄ J'o sicut prius dist̄r qđ sint hic a die s̄c̄e Trinitatis in xv dies p̄ Justiç ad quē diē viç non mis̄ b̄re J'o sicut pluř dist̄r qđ sint hic a die s̄c̄i Michis in xv dies.—Ibid. m. 228.

Devoñ.

¶ Abbas de fforde p̄ Johem Crukerñ att̄ suū op. se iiij^{to} die vsus Thomā Stremynge vicař eccl̄ie de Thorncombe de p̄ito quare cū idem Abbas dñs Mañlii de Thorncombe existat t̄ here debeat ipeq̄ t̄ omēs p̄decessores sui dñi Mañlii p̄d̄ci a tempore quo non exstat memoria ibidē here consueuer̄ quand̄ cuř de hōibz t̄ tenentibz suis Mañlii p̄d̄ci in quodā loco infra idem Mañliū p̄ cuř p̄d̄ca de tribz septimanis in tres septiās antiquit̄ vsitat̄ p̄d̄cus Thomas Nichm Bolour balliū ipius Abbis ad Cuř p̄d̄cm apud Thorncombe in loco p̄d̄co tenendz p̄ p̄fatū Abtem deputat̄ quomin⁹ idem Nichus Cuř illam ibidem tenere potuit vi t̄ armis impediuit p̄ quod idem Abbas p̄ficiū quod de Cuř p̄d̄ca si ibidem tenta fuisset p̄cepisse debuisset amisit t̄ alia enormia t̄c̄ ad dampnū ipius Abbis quadraginta libraz t̄ cont̄ pacē Regē t̄ Et ipe non veñ Et sicut prius p̄ceptū fuit viç qđ capet eū t̄ Et viç modo mand̄ qđ non est inuentus J'o sicut pluř p̄c̄ est viç qđ capiat eū si t̄c̄ Ita qđ

Devoñ.
(m. 391.)

heat corpus eius hic a die s̄c̄e Trinitatis in vx dies p Justic̄.—
Ibid. m. 391.

275. Nicholas was the next Abbot. His name occurs as early as 1388, Oliver says, but without giving his authority; but in one of the following entries from the De Banco Roll we have an Abbot Walter, in Hilary Term, 2 Hen. IV.

Devoñ.

¶ Abbas de fforde p Johem Sparowe aīt suū oī se iiij^{to} die
vsus Laurenciū Archere de p̄lito quare vi ⁊ armis arbores ⁊
subboscum ip̄ius Abbis apud Sattedburgh nup crescentes suc-
cidit ⁊ in sepali piscaria sua ibm piscatus fuit ⁊ piscem inde
ac arbores ⁊ subboscum p̄dcos ad valenciam viginti libraz
cepit ⁊ asportauit ⁊ alia enormia ⁊c. ad g^{ue} dampnū ⁊c. et
cont^{ra} pacē Regē ⁊c. Et ip̄e non veñ Et preç fuit viç qđ distr̄
eū Et viç modo mand qđ nichil hent ⁊c p quod potest distr̄i
J'o preç est viç qđ capiat eū si ⁊c Et salus ⁊c Ita qđ heat
corpus eius hic a die Pasche in tres septimanas ⁊c.—De Banco
Roll, 19 Ric. II. m. 166.

Devoñ.

¶ Abbas de fforde p Johem Sparowe aīt suū oī se iiij^{to} die
vsus Georgiū Crukerñ ⁊ Galfr̄m Smyth de p̄lito quare vi ⁊
armis clausā ip̄ius Abbis apud Bromhille ⁊ Wythewylle frege-
runt ⁊ arbores ⁊ subboscum suos ad valenciam centū solidor̄
ibm nup crescentes succider̄ ⁊ asportauer̄ ⁊ blada ⁊ h̄bam
sua ad valenciam decem marcaz ibm nup crescentia cū qui-
busdam aliis depasti fuerunt conculcauer̄ ⁊ consumps̄ ⁊ alia
enormia ⁊c ad g^{ue} dampnū ⁊c et cont^{ra} pacē Regē ⁊c Et ip̄i
non veñ Et p̄c fuit viç qđ attachet eos Et viç modo mand qđ
nichil hent ⁊c. J'o preç est viç qđ capiat eos si ⁊c. Et saluo
⁊c. Ita qđ heat corpora eor̄ hic a die Pasche in tres septi-
manas ⁊c.—Ibid. m. 167.

Devoñ.

¶ Abbas de fforde p Johem Sparowe aīt suū oī se iiij^{to}
die vsus Georgiū Knyf ⁊ Thomā Crukerñ c̄ticum de p̄lito
quare vi ⁊ armis in sepali piscaria ip̄ius Abbis apud Shyterok
piscati fuerunt ⁊ piscem inde ad valenciam decem marcaz
ceper̄ ⁊ asportauer̄ ⁊ alia enormia ⁊c ad gu^{ue} dampnū ⁊c et
cont^{ra} pacē Regē ⁊c. Et ip̄i non veñ. Et p̄c fuit viç qđ attachet
eos. Et viç modo mand qđ nichil hent ⁊c. J'o preç est viç qđ
capiat eos si ⁊c. Et saluo ⁊c. Ita qđ heat corpora eor̄ hic a
die Pasche in tres septimanas ⁊c.—Ibid. m. 167.

Devoñ.

¶ Abbas de fforde ⁊ fraḡ Henr̄ Kernere cōmonacus
eiusdem Abbis p Johem Sparowe attorñ suū oī se iiij^{to} die

vsus Johem Crawelegn de pñto qđ reddat eis quadraginta ꝛ sex solidos ꝛ octo denar quos ei debet ꝛ iniuste detinet ꝛ. Et ipe non veni Et sicut pluꝛ fuit distꝛ p catalla ad valenciã duodecim denar Et ilt p Juonẽ Donne ꝛ Lucã Moune l'o iꝑi in mĩa Et sicut pluꝛ preç est viç qđ distꝛ eũ p omes lras ꝛ Et qđ de exiꝛ ꝛ Et qđ heat corpus eius hic a die Pasche in tres septimanas p Justiç ꝛ.—Ibid. m. 167 d.

m. 167 d.

¶ Abbas de fforde p Johem Spwe atꝛ suũ oꝑ se iiij^{to} die vsus Johem atte Wille de pñto quare vi ꝛ armis bona ꝛ catalla iꝑius Abbis ad valenciã quadraginta libraz apud fforde inueni cepit ꝛ asportauit ꝛ Walſum Whyte natiuũ ꝛ suientem suũ in suico suo ibid existenẽ cepit ꝛ abduxit p quod idem Abbas suiciũ natiui ꝛ suientis sui pñci p magnũ tempus amisit ꝛ alia enormia ꝛ cont^{ra} pacem Regis ꝛ. Et ipe non venit. Et pñ fuit viç qđ attach eũ Et viç modo mand qđ nichil het l'o pñ est viç qđ capiat eũ si ꝛ. Ita qđ heat corpus eius hie a die Pasche in tres septias p Justiç.—Ibid. m. 186.

Devoñ.

m. 186.

¶ Walſus Abbas de fforde Robtus Borde Bocher Wiffs atte Horsmylle Johes Baker ꝛ Stephus Eueray attach fuerunt ad respondend Edwardo Osborne vicario ecclie de Thornecombe de pñto quare vi ꝛ armis clausum iꝑius Edwardi apud Thornecombe fregerunt ꝛ quatuor vaccas ꝛ sexaginta porcos suos ibidem inuentos cum quibusdam canibꝫ fugauerunt canes illos ad mordend vaccas ꝛ porcos pñcos in tantum incitando qđ p fugaçõem illam ꝛ morsus canũ pñcoꝝ due vacce ꝛ quadraginta porci pñci decem marcaꝫ de vaccis ꝛ porcis pñcis intierunt ꝛ vacce ꝛ porci residui multiplici detiorati fuerunt ac vaccas ꝛ porcos residuos ibidem ceperunt ꝛ imparcauerunt ꝛ eos ibidem sic imparcatos quousq idem Edwardus finem p quadraginta solidos p deliberaçõe vaccarꝫ ꝛ porcorꝫ residuorꝫ pñcoꝝ henda cum pñatis Abbe Robto Wiffo Johẽ ꝛ Stepho fecisset detinuerunt Et alia enormia ei intulerunt ad g^{ra}ue dampnũ iꝑius Edwardi Et cont^{ra} pacem dñi Rẽ nup Regis Angl scđi post conquestum ꝛ Et vnde idem Edwardus p Johem Goold attorn suũ querit qđ pñci Abbas Robtus Wiffs Johes ꝛ Stephus die lune pñ post festũ scđi Michis Anno regni dñi Rẽ nup Regis Angl tciodecimo vi ꝛ armis scitt gladiis arcubꝫ ꝛ sagittis clausum iꝑius Edwardi apud Thornecombe fregerunt ꝛ quatuor vaccas ꝛ sexaginta porcos suos ibidem inuentos cum quibusdam canibꝫ fugauerunt canes illos ad mordend vaccas ꝛ porcos pñcos in tantum incitando qđ p fugaçõem illam ꝛ morsus canũ pñcoꝝ due vacce ꝛ quadraginta porci pñci tẽ de vaccis ꝛ porcis pñcis intierunt

Devoñ.

et vacce et porci residui multipliciter deteriorati fuerunt ac vaccas et porcos residuos ibidem ceperunt et imparcaverunt et eos ibidem sic imparcatos quousque idem Edwardus finem tunc per delibationem vaccarum et porcorum residuorum predictorum henda cum prefatis Abbe Roberto Wilto Johne et Stephano fecisset, detinuerunt Et alia enormia tunc ad gravem dampnum tunc Et contra pacem tunc Unde dicitur quod deterioratus est et dampnum habet ad valenciam quadraginta librarum Et inde predictam sectam tunc.

Et predicti Abbas Robertus Willelmi Johes et Stephanus per Thomam Martyn attornium suum veniunt Et defendunt vim et iniuriam quando tunc Et dicitur quod ipsi in nullo sunt culpabiles de transgressione predicta putant predicti Edwardus superius versus eos querit Et de hoc ponit se super priam Et predictus Edwardus similiter Iste predictus est vicarius quod venire faciat hic a die Pasche in xv dies xij tunc per quos tunc Et qui nec tunc ad recognoscere tunc Quia tam tunc.—Ibid. 2 Hen. IV., Hilary, m. 138d.

As I have said, it will be noticed that here we have Walter mentioned as Abbot. The explanation may be that the proceedings were commenced in Walter Burstok's time, and his name continued on the pleadings after his death.

Devoñ.

¶ Abbas de fforde per attornium suum opus se iij^{to} die versus Thomam Splent de pfito quod reddat ei rationabilem compotum suum de tempore quo fuit ballivus suus in Westforde et receptor denariorum ipsius Abbis Et ipsi non veniunt Et preceps fuit vicarius quod sum eum tunc Et vicarius modo mandavit quod nichil habet tunc Iste preceps est vicarius quod capiat eum si tunc Et salvo tunc Ita quod habet corpus eius hic a die Pasche in unum Mensem tunc.—Ibid. m. 459.

De Banco Roll; Trin. 2 Henry IV.

Devoñ.

¶ Abbas de fforde contra attornium suum opus se iij^{to} die versus Thomam Splent de pfito quod ei reddat ei rationabilem compotum suum de tempore quo fuit ballivus suis in Westforde et receptor denariorum ipsius Abbis Et ipse non veniunt Et sicut prius preceps fuit vicarius quod capiat eum tunc Et vicarius modo non misit breve tunc Iste sicut plures capitavit quod sit hic in Octabis sancti Michaelis tunc.—Ibid. Trin. 2 Hen. IV., m. 2958.

Devoñ.

¶ Abbas de fforde per attornium suum opus se iij^{to} die versus Johem Smyth de Tale et Johem Seger de Taletoñ de pfito quare vi et armis clausa ipsius Abbis apud Tale fregerunt et liberam warrennam suam ibidem intraverunt et in ea sine licencia et voluntate sua fugaverunt et in sepali piscaria sua ibidem piscati fuerunt et piscem inde ad valenciam centum solidorum ac lepores cuniculos phasianos et predictos de warrenna predicta ceperunt et asportaverunt et alia enormia tunc et contra pacem tunc Et ipsi non veniunt Et preceps fuit

viç qđ attach eos 7c Et viç mand qđ nichil hent 7c I'o capiant
qđ sint hic in Octabis sçi Michis 7c.—Ibid., Trinity, 8 Hen.
IV., m. 409.

276. Of the succeeding abbots until the last we know very little. John Bokeland was confirmed 10 June, 1419. Richard succeeded him. Robert occurs in 1448.

¶ Abbas de fforde p attorn suū op se iiij^{to} die vsus Gilbtum Pyper alias dcm Gilbtum Boteswayn de Elleworth in Coñ Dorſ husbondman de pñto t^o nsgr Et ipe non veñ Et preç fuit viç qđ attachet eū 7c Et viç retorñ qđ ipi nichil het 7c p quod 7c I'o preç est viç qđ capiat eū si 7c Et salvo 7c Ita qđ heat corpus eius coram dno Rege a die sçi Hillañ in xv dies vbicūqz 7c Et vnde in xv sçi Martini 7c.—Coram Rege Roll, Mich. 1 Hen. VI., m. 35.

Devoñ.

277. The next entry in the De Banco Roll relating to Ford gives the name of Walter, and thus enables me to add a new abbot to the list. This is on the Roll for Michaelmas term, 38 Hen. VI.

¶ Waltus Abbas de fforda p attorn suū op se iiij^{to} die vsus Waltum Colebroke de parochia de Columpton in Coñ pñco Gentilman de pñto quare cum idem Abbas in feodo suo apud Colbroke p cons 7c iuiciis sibi debitis p Waltum Holway iuient suū quedam aūia capi fecisset 7c idem Waltus Holway aūia illa scdm legem 7c cons regni Regis Angt imparcare voluisset pñcus Waltus Colbroke aūia pñca vi 7c armis rescussit Et alia enormia 7c ad g^{ue} dampnū 7c Et cont^a pacem Regis 7c. Et ipe non veñ. Et preç fuit viç sicut prius qđ distr eum 7c. Et viç modo mand qđ distr est p catalla ad valenç duodecim denař. Et manuç p Edm Mate 7c Riçm Ware. I'o ipi in mīa. Et sicut pluř distr qđ sit hic in Octabis sçi Hillañ Ad quē diem viç non mis bře I'o sicut pluř distr qđ sit hic a die Pasche in vx dies 7c.—De Banco Roll Mich. 38 Hen. VI. m. 52d.

Devoñ.

278. My last extract, too, refers to a claim made in the time of Walter, the newly found Abbot.

Waltus Abbas de fforde p attorn suū op se iiij^{to} die vsus Robtum Cammeff de fytelford in Coñ Dorſ Gentilman alias dcm Robtum Cammeff de Cammeff in Coñ Dorſ Genosum de pñto qđ reddat ei decem libras quas ei debet 7c iniuste

Devoñ.

detinet ꝛc. Et iꝛe non veñ. Et preç fuit viç sicut prius qđ capet eum ꝛc. Et viç modo mand ꝛđ non est inuent ꝛc. I'o sicut pluꝛ capiat ꝛđ sit hic in Octabis sçi Hillaꝛ ꝛc.—Ibid. 253.

279. Then comes Elias, in 1462, and William White, who was apparently Abbot for upwards of thirty years, from at least as early as 1490 to 1521.

280. The last Abbot, Thomas Charde, otherwise Tybbes, has left something more than a name. He was one of the most distinguished men of whom the Abbey could boast. He was not only an eminent scholar and divine, but the buildings at Ford show him to have been an artist of no mean capabilities. Dr. Oliver has given a memoir, and Dr. J. H. Pring has dealt with the history of his life in fuller detail.* He succeeded in 1521. An account of his various preferments, some probably of great value, and given him to support to some extent his dignity as Suffragan Bishop to his Diocesan, Oldham, will be found in the memoirs to which I have referred. He was evidently fond of building, and remodelled the domestic buildings at Ford on a scale of great magnificence. The beautiful tower, the north walk of the cloister, all that now exists, and the new refectory, with his initials, mitre, and abbot's cap, were as much admired by his contemporaries as by succeeding generations. He surrendered his house 8th March, 1539, at which time there was the full number of thirteen monks. He did not survive the fall long, dying full of years and honours early in 1544.

281. Thus Ford shared the fate of its sister houses. They were all surrendered in 1538-9, but in all probability no buildings were so perfect, and none were abandoned with greater grief than this important foundation. Its revenues amounted to £374 10s. 6½d., according to Dugdale, and its possessions, besides those in the immediate neighbourhood of the Abbey, extended into the adjoining counties of Somerset and Dorset, and as far as Lynton and Countisbury on the north coast.

282. The history of the Abbey after the dissolution is well known, as it became the home of many distinguished families. It and the adjoining land was first leased to Richard Pollard for a term of twenty-one years, at an annual rental of £49 6s. 6d., but the following year, 23rd June, 1540, the lessee obtained from the king a conveyance in fee. Sir John Pollard succeeded his father, and sold Ford Abbey to his cousin, Sir Amias Poulett, of whom William Rosewell, Queen Elizabeth's

* *A Memoir of Thomas Charde, D.D.*, by James Hurly Pring, M.D., 1864.

Solicitor-General, bought it; and his son, Sir Henry Rosewell, sold it to Edmund Prideaux, who, employing Inigo Jones, proceeded to convert the domestic buildings of the convent into a mansion, at what must have been a great expenditure. In the Prideaux, Gwyn, and Fraunceis families the Abbey continued down to 1847, when on the death of John Fraunceis Gwyn it was sold to G. F. W. Miles, Esq., by whom however it was not long retained, the present owner, Herbert Evans, Esq., becoming its possessor by purchase.

283. No Cistercian building in England, perhaps none in the world, remains in so perfect a state as that of Ford. The site is on the south of the Axe river, the formation of the ground compelling the monks to take that bank of the river instead of, as they preferred, the north. The stream flowing into the river rises in the ground south of the Abbey, and the fish ponds which were constructed in its course still remain, although somewhat altered in shape. The principal entrance is now from the east, and the visitor approaching the Abbey walks over the foundations of the antient church, and treads under foot the dust of stately ecclesiastics and noble founders.

284. Not a vestige remains of the monastic church. The entrance road crosses the north aisle, and the south side of the cloister. This was not consecrated until 1239, but it must not be supposed that there was no building for divine service until that time. The whole of the buildings were in all probability laid out from the beginning, and the work completed as the bounty of the faithful allowed. It was the finished church no doubt that was consecrated nearly a century after the monks left Brightley. Within its walls the remains of Richard the Viscount, Richard the Abbot, Adelicia (1142), Hawisia de Courtenay (1209), Reginald or William de Courtenay (1192-94), Robert de Courtenay (1242), and John de Courtenay (1273), found resting places.

285. Turning to the right we shall enter a building fitted up as a chapel, and usually considered to be the church of the Abbey. This is a chamber of the greatest interest, it being in fact no other than the chapter house of the monks. It is of twelfth-century work, transitional Norman, with pointed vault of two bays. In the extensive alterations of the Abbey made by Edmund Prideaux, this was converted into the domestic chapel of the mansion, and here Cromwell's Attorney-General was buried in 1659. On the walls are various memorial tablets.

286. Over the chapter-house would be originally the library. This is now completely altered into a spacious modern room.

Through the library the monks passed from their dormitory to the church, the staircase leading down to it being probably in the north transept.

287. Still passing northward we enter a vaulted chamber, originally nearly 170 feet long, and divided by a central row of eleven columns, all of which with the vaulting are perfect. This building is of rather later date than the chapter-house, and the work is of an elegant and delicate description. Over it is the dormitory of the monks, almost perfect, although now divided up to furnish sleeping apartments for the servants of the mansion.

288. Retracing our steps we come to the south front of the house, and find ourselves in the north walk of the cloister. This is eighty-two feet in length. All but this side is destroyed, and the beautiful Perpendicular work is that of Charde the last Abbot, whose memory is so intimately interwoven with Ford. He did not scruple here to mingle his initials, T. C., and his episcopal and abbatial insignia, with the arms of the Abbey and the King, on the many shields which decorate the spaces between the buttresses and between and over the tracery. Within the existing portion of the cloister and on the north may be traced the ancient refectory (of the later we shall speak presently), although it is blocked up with modern partitions. The kitchen of the monastery remains the kitchen of the mansion.

289. We now come to the *domus conversorum*, but a small portion only of it remains. In its original state it extended northward from the church, probably as far as the diverted stream, which formed the common sewer of the house, and was therefore at least two hundred feet long, the breadth being twenty-six feet. The whole of this however was not occupied by the convent, as traces of divisions can be made out. Over were the dormitories of the lay brethren.

290. We now enter the hall, which is really the eastern end of the new refectory of Abbot Charde. In its original state this fine room was one hundred and fifteen feet long. The western part was divided and altered by Inigo Jones to form the state apartments, and, shorn as it is now of its fair proportions, it still remains a very fine apartment.

291. The barn still remains, and between it and the western end of Charde's refectory may be found remains, probably of the gatehouse; for it was on this side, not on the east, that the entrance formerly was.

292. The alterations made by Inigo Jones, while to a great extent destroying many of the ancient features and disfiguring

the fine work of Charde, and mutilating its proportions, tended to make the abbey a convenient and commodious residence. The dining and drawing rooms are good apartments with elaborate ceilings, and the staircase and saloon are finely designed. But still, in spite of the interference with his architecture and the incongruities of Inigo Jones's additions, Charde's work remains pre-eminently beautiful, and renders Ford Abbey perhaps the most interesting building architecturally, as it is archæologically, in the west country.

293. The property of the Abbey was not of great extent, although at the dissolution its annual value was second only to that of Buckfast. It was, as I have said, situated in the immediate neighbourhood of the Abbey, in the north of the county, at Lynton and Countisbury, and in Somerset and Dorset. Besides Adelia, the later Courtenays endowed Ford with some of their wealth and the Pomeroy's also were its benefactors.

294. The arms of the Abbey were a stag's head caboshed, and the shields containing them may be found in various parts of the buildings of Charde.

295. The seals of the Abbey so far known are but two. One described by Oliver is oval, "divided into three compartments. In the upper part, between two pointed windows, a bell appears suspended in a steeple. In the canopy beneath, is the Blessed Virgin and Divine Infant. On the dexter side is the Courtenay shield, Or, three torteaux, with a label of three points. On the sinister is the shield of Beaumont, Barry of six vairy and gules. Below is an Abbot erect, holding his crozier in his right hand and a book in his left, and three persons on their knees." The legend is,

S. Commune Monasterii Beate Marie de Forda.

Another seal, and one not hitherto described, is said to represent the Abbot between two shields, on the dexter that of the Courtenays, and on the sinister a lion rampant. A legend surrounds the device. This seal is appended to a grant from William Toterigge and Mabilla his wife to Edward Blakforde, John Forde Capellanus, and others, of tenements in Sperhay. This deed was for sale by a firm of London booksellers in 1875, but I have not been able to trace its present owner.

296. With this brief account of Ford I bring to a close this series of papers on the Cistercian Houses of Devon, and trust that I have been enabled to add a little to their somewhat meagre history.

APPENDIX.

LIST OF THE ABBOTS OF FORD.

Name.	Date.	Authorities.
Richard	1136	Harleian MSS.
Robert de Penynton	1137-1168 ?	Do.
Baldwin	-1181 ?	Various.
Robert		Harleian MSS.
John	1191-1120	Leland and Various.
John	Until 1236	Feet of Fines and Documents.
Roger	In 1236	Documents.
John de Warwick	Died in 1246	Harleian MSS.
Adam		Do. Oliver.
William	Died 1262	Oliver, Dugdale, and various.
William of Crukerne	1262	Various.
Nicholas	From 1283	Episcopal Register.
William de Fria	Resigned 1297	Various.
Henry	In 1312	Oliver.
William	From 1319	Episcopal Registers.
John		Do.
John de Chidley	From 1330	Do.
Adam	From 1354	Do.
John Chylheglys	In 1373	Do.
Walter Burstok	From 1378	Do.
Nicholas	In 1388	
Walter ?		See par. 275.
John Bokeland	From 1419	Episcopal Registers.
Richard		Oliver.
Robert	In 1448	Oliver.
Walter	In 1460	De Banco Roll.
Elias	In 1462	Oliver.
William White	In 1490	Various.
Thomas Charde	1521-1539	Various.

NEWENHAM ABBEY.

Mr. Davidson has very kindly furnished me with a transcript from the Cartulary of Glastonbury, in the Bodleian Library, relating to Newenham Abbey, which I am very glad to be able to add here.

The following seems to have been the substance of the dispute.

The manor and hundred of Axminster, which belonged at the Conquest to the King, were, by a donation in the year 1246, granted by Reginald de Mohun to the Abbey of Newenham. The grant of the hundred carried with it the right to have suit (*secta*) and service (*servitium*) from the owners of the several tithings in the hundred, at the hundred court, when the sheriff made his visitation or tourn. One of the tithings in Axminster hundred was Uplyme, of which manor the Abbot of Glastonbury was lord; and it is to be presumed that from and after 1246 the seneschal of the Abbot of Glastonbury, on each occasion of a sheriff's tourn being held at Axminster, presented himself and did suit (*secta*) to the Abbot of Newenham for the tithing of Uplyme. This "doing suit of court" had been and might be commuted to a payment of ten shillings a year for the sheriff's tourn, and a yearly rent of 6s. 8d. for horderisgeld, "*hordarii geldum*," or treasurer's tax, which seems to have been a peculiar impost payable to a religious house when lords of a manor. It happened, however, that upon the death of an Abbot of Glastonbury, the fruits of the Abbey possessions became vested in the crown during the vacancy, and the seneschal neglected either to do suit of court, or to pay either the fee due at the hundred court to the lord of the manor, or the treasurer's tax, due to the Abbot of Newenham. Thereupon it was alleged, a number of persons, twelve of whom are named, went over from Newenham and its neighbourhood to Uplyme, entered an enclosed field belonging to the Abbot of Glastonbury, and there burnt some growing rushes and other standing crops. At the same time one Robert Tudde, bailiff of Axminster, seised and carried off 37 beasts belonging to the Abbot, by way of distress for non-payment of the fees due at the last sheriff's tourn. This led to a process of law being instituted. A writ was issued to the sheriff to inquire into the truth of the alleged enormities, and to attach the wrong-doers. The return made by the jurors on the 25th of January, 1275, established the truth of the charges, and on the 5th of February following a writ was issued by the Crown, dated at Reading, which was in the nature of a

decree or judgment. It took the form of commanding the Sheriff of Devon to take bail for the appearance of the following persons—John, Abbot of Newenham, Brother Henry de la Boneie, Luke le Messer, William Russel, William Todde, Richard de Cleyhulle, Nicholas Pin, and Nicholas Dare, to shew cause why they, together with Richard le Berker, Richard the son of Amiable of Shapwick, John of Egelcumbe, John the son of Richard Care, and William Salomon, and others, committed the acts above mentioned; also to shew cause why they did not appear on the morrow of the Purification of the Virgin (2nd February) as summoned by their sureties. The names of the sureties, are then given.

For the Abbot	{	Robert Squirel. Reginald Fayth.
For the Friar Henry of Bouere	{	Adam Scurel. Thomas Fait.
For Luke le Messer	{	Reginald Gladewine. William Velfais.
For William	{	Reginald Copiner. William Blonoch.
For Robert Tudde	{	Hugh Douile. Thomas Bal.
For Nicholas de Cleihulle	{	Richard le Pottere. Nicholas Pin.
For Nicholas Pin	{	Richard Humas. Walter Grey.
For Nicholas Dare	{	Thomas Grugg. Thomas Tannur.

The writ goes on to direct the sheriff to take bail for Richard le Berker, and the other delinquents named, to appear and shew cause together with the eight defendants for whom bail had been taken before.

The narrative of the law-suit is here interrupted in order to introduce an agreement, made in October, 1275, between the Abbots of Glastonbury and Newenham, with regard to the boundaries of some contiguous lands, whereby in consideration of thirty marks paid by the Abbot of Newenham to the Abbot of Glastonbury, the dispute was settled, and all legal proceedings stayed.

We then find an entry of a deed of release and quit-claim on the part of the Abbot of Newenham to the Abbot of Glastonbury of the hundred suit and sheriff's tourn due to the former in respect of Uplyme, in consideration of forty

marks paid by the latter to the former. This last mentioned deed is to be found in the register of Newenham, and has been already observed upon.*

This is a transcript of the original—

MSS. Bodl: Wood i. 212 b.

¶ Processus placiti inter dñm regem et abbatem de Newenham pro tñas in manerio de vplim abbis Glastonie.

Breve originale.

Rex vicecomiti Devonie salutem quia accepim⁹ quod quidam malefactores ⁊ pacis nre perturbatores nuper uenerunt ad quendam seperalem pasturam in vplim que pertinet ad abathiam Glastonie in manu nra existentē racione vacionis cuiusdam ⁊ de qua vltimus abbas eiusdem abbathie obiit seisiau et jaun⁹ ⁊ alia in eadem pastura crescentia combusserunt ⁊ alia enormia ibidem perpetraverunt ad graue dampnū ipius abbathie in nostri contempt⁹ manifestum ⁊ contra pacem nrām tibi ꝑcipimus quod per sacramentum proborum ⁊ legaliū hoīm de balliua tua per quod rei ueritas melius sciri poterit diligenter inquiras qui predictā transgr⁹ fecerunt ⁊ omnes illos quos per inquisitionem illam inde culpabiles inueneris attachies ita quod hēas corpora eorum corā nobis in crastino Purificacoīs beate Marie vbicumq; tunc fuerimus in anglia ad respondendū nobis de transgressioē ꝑdicta et habeas ibi hoc breue. Teste me ipō apud Marleberghe ⁊c.

Ib. 212 b.

Inquisicio capta apd⁹ exoniam per ꝑdict⁹ brē.

Friday, 25 Jan.
1275.

Inquisicio capta apud Exoniam die veneris in festo conuersionis sancti Pauli anno regni Regis Edwardi tercio qui malefactores ⁊ pacis Domini Regis perturbatores nuper uenerunt in quandam seperalem pasturam in vplim que pertinet ad abbathiam Glastonie et janta et alia in eadem pastura crescentia combusserunt ⁊ alia enormia ibidem perpetraverunt in ꝑjudiciū Domini Regis ad dampnum ipius abbē manifestum ⁊ contra pacem domini regis per sacramētum Johannis de Hitone, Johannis fit Galfriū, Rog⁹ de Clauile, Hugonis de Raleigh, Willi de la uerge, Willi Vinorthetheie Willi de Cranesweye, Henrici de Hayuile, Philippi de Combe, Willi de esse, Roberti Russel, Roberto Puñ, Waltero Wering, Henrico de Wicrofte, Henrico de Hale, Ricardo de Boclande, Roberto Beuener, Nicholai de la Forde, Jordano de la Roche, Jordani de Harecumbe et Walteri de Fraunceis Qui dicunt super sacramentum suum quod Henricus de la bouecte

* Davidson, *Hist. of Newenham Abbey*, pp. 24, 25.

de Niwenham frater Ricardus de la Beker⁹, Lucas le messer de Nywenham, Willm Russel de la bate, Robertus Todde Ric⁹ filius amiable de schapewik, Johannes de Egelcumbe, Johannes filius Ricardi Care de Egelcumbe, Henr⁹ filius David de Egelcumbe, Johannes de la Sale, Ricardus Wrangle. Ric⁹ faber ⁊ Willms Salomon ⁊ alii multi quorum nomina ignorant vi ⁊ armis venerunt ad terram abbie Glastonie in vplim que est in manu domini regis racione uacationis abbathe predictie ⁊ janta ipius abbie Glastonie in eodem manerio crescentia contra pacem dni regis [combusserunt]. Et dicunt quod Robertus Tudde balliuus de Axminstre alia enormia ibidem fecit videlicet cepit triginta ⁊ septem au⁹ia ipius abbie Glaston pro quadam secta quam exigit abbas de Niwenham ab abbatem Glastonie ad turnu quod senescallus ipius abbis tenuit in vltimo hundredo suo quod tennerunt post festum sancti Michaelis vbi pdictus abbas Glastonie nullam secta debet nec homines sui nec etiam homines de feodo ipius abbatis Glastonie eo quod quieti sunt per cartā abbatis et conuentus de Newenham. In cuius rei testimoniū huic inquisitioni sigilla sua alternatiui apposuerunt. Dat dictis die ⁊ anno.

¶ Breue iudicii.

Rex vicecomiti deuonie salutem. Pone per uadium ⁊ meliores plegg⁹ Johannē abbatem de niwenham fratrem henricū de la bonei, lucam le messer, Willm Russel, Willm Todde, Richm de cleyhulle, Nicholaum Pin ⁊ nichm dare quod sint coram nobis a die pasche in quinta septim⁹ ad rñded' nobis de placito quare ipi simul cum frē Ricardo le berker, Ricco filio amiable de schapewik, Johne de egelcumbe, Johanne filio Ricci Care et Willmo Salomon et alii nuper uenerunt ad quamdam seperalem pastur⁹ in vplim que pertinet ad abbatiam Glastonie in manu nra existente occasione vacationis eiusdem ⁊ de qua ultimus eiusdem abbathe obiit seisiau et janet ⁊ alia in eadem pastura crescentia combusserunt ⁊ alia enormia ibidem perpetraverunt ad grave dampnū ipius abbie et nostri contemptum manifestum et contra pacem nostram ut dicitur. Et ad ostendendum quare non fuerunt coram nobis in crastino purificationis beate marie sicut attachiati fuerunt ⁊ sūmoniti per bonos sūm. Robertum Squirel ⁊ Reginad' fayth primos uel pdicti Johannis abbis de Newenham ⁊ adam Scurel ⁊ Thoma fait primos pl'pdicti fratris henrici de la bouer⁹ Et regni⁹ Gladewine et Willm velfais pmos pl'predicti luce le messer. Et reginaldus copiner et Willm blonoch primos pleg⁹ predicti Will'i ⁊ hug⁹ douile ⁊ thoñ bal. primos pl'predicti Roberti

Tudde ⁊ Ricm le pottere ⁊ nichm pin primos pl'pdicti nich'i de cleihulle ⁊ ricm humas ⁊ Walterum Grey pmos pl'pdicti nich'i pin. Thom Grugg ⁊ Thom tannur primos pl'pdicti nich'i dare quod sint coram nobis ad prefatum terminu ante iudiciu suu de hoc quod non huerunt predictos Johannem abbatem de Niwenham ⁊ alios coram nobis in crastino purificationis beate marie sicut eos pleg precipim tibi quod no ommittas propter libertatem abbatis quin ponas per vad' ⁊ saluos pleg pdictos fratrem Ricardum le berker, Ricm filium amabile de schapwik, Johannem de Egelcombe ⁊ alios quod sint coram nobis ad pfatum terminu ad respondendum nobis simul cum pdictis Johanne abbate de Niwenham ⁊ aliis de predicto placito. Et vnde tu tpe nobis mandasti in crastino pur^o be mar^o quod preceperas balliuis predictae libertat^{is} quod attachiat^{is} pdictos frēm Ricm le berker ⁊ alios quod eēt coram nobis ad eundem terminu ad respondendum nobis simul cum pdictis Johanne abbate de Nievenham ⁊ aliis de predicto placito qui nichil inde fecerunt ⁊ habeas ibi nomina secundoꝝ pleg ⁊ suū pleg ⁊ hoc bre. Test^r & de hengham apud Radinge v^o die febrⁱ anno regni nri tercio.

5 Feb. 1275.

Memorandum quod cum eēt contencio inter uiros religiosos dominum Johannem abbatem ⁊ cōuentum Glastonie ex una parte ⁊ Johannem abbatem ⁊ conuentum de Niwenham ex parte altera super terrarum suarum sese contingenaciū terminis atq; metis tandem pdictus abbas de Niwenham volens nec sufferens diucius durare sed omnino uolens dirimere litis materiam ante mote pro se ⁊ conuentu suo uadiavit pdictis abbati et conuentui Glastonie triginta marcas pro bono pacis ⁊ ob captandam ab eisdem gratiam ⁊ fauorem. Ita quod p'dictus abbas ⁊ conuentus de Newenham predictis abbati ⁊ conuentui Glastonie dabunt et soluent Decem marcas argenti de summa p'dictarum triginta marcarum citra nat' domini proximi futuꝝ et residue xx marcarū de summa eadem ex predictorum abbis ⁊ conuentus Glastonie tali conditione ⁊ modo sunt posite in respectu ut si bene se gesserunt abbas ⁊ conuent^o de Newenhā erga abbatem ⁊ conuentum Glastonie nominatim in negotio perambulationis utriusque partis assensu inter terras suas faciendis quam neutra pars ullo malo ingenio impediet nec peruertet. Statim peracto negotio penitus remittentur nec alterutri parte competet actio per p'sentes. Dat' london mens oct^o anno dñi m^o.cc. septuagessio qnto.

¶ Carta abbī de Newenhā de quietaclamancia secte hunder^o ⁊ torno vicecom^{is} de vplim.

Oct. 1275.

Omnibus has literas visuris uel auditoris Henricus dī gratia

abbas de Niwenham ⁊ eiusdē loci conuentus salutem eternam in dño. Nouert uniuersitas uestra nos pro nob' et successoribus nōis imperpetuū remisisse et quietumclamasse domino michi abbati glast' et eiusdem loci conuentui ⁊ ecclie Glastonie totum ius ⁊ clameum quod huius uel hēre potuimus versus ip̄m abbatem glastonie ⁊ successores suos ⁊ omnes homines suos ⁊ oī homines de feodis suis de manerio suo de vplim de sect' hundred' ⁊ torno vic' que nos exegimus ab eis ad hundred' nostrum de axeminstre quod habemus de dono reginaldi de moun ⁊ confirmacione domini henrici regis filii regis Johannis ⁊ similiter de sexdeceim solid' ⁊ octo denar' quos exegimus ab eisdem per annū vnde decem solidos sunt de turno vicecoñ et vj sol' et viij d' sunt de quodam redditu qui uocatur horderesgeld' vnde inplacitauius predictum michaelē abbatem per breue domini regis in comit' exoñ. Ita quod nec nos nec successores nostri unquam in posterum clamare uel exigere poterimus de predictis abbate nec conuentu Glastoñ nec eorum successoribus nec etiam ab hominibus suis nec ab hominibus de feod' suis de p̄dicto manerio de vplim aliquam sectam aut p̄dictos sexdecim solidos ⁊ iiij denar' per annū uel aliquod aliud quod ad nos uel successores nostros aliquo occasione tempore predicti hundredi nři de Axeminstre accidere poterit. Hoc solumodo saluo nobis ⁊ successoribus nři quod si balliuos nroꝝ abbatis ⁊ conuentus de vplim in executione mandati dñi regis quod per bře suum vicecoñ deuonie demandat' fuerit ⁊ postea nobis per returnū per ip̄m vicecoñ de mandat' fuerit ⁊ nos postea idem mandatum per returnū predictis balliuis ip̄ius abbatis de vplim demandauerimus negligentes ēe constiterit ita quod mandatum domini regis in hac parte non fuerint (*sic*) executi, bene licebit tunc balliui de axeminstre qui pro tempore fuit tanquam balliuo vicecoñ ⁊ non tanquam balliuo nro predictum manerium de vplim intrare ⁊ mandatum illud ea uice executioni demandare, ita quod nec p̄dictus abbat ⁊ conuentui Glastonie nec ecclie Glastonie nec hominibus suis de vplim per mandati illius executioni aliquod unquam in posterum preiudiciū generetur omnes autem prescriptas libertates predictis abbati ⁊ conventui Glastonie ac ecclie Glastonie contra omnes homines ⁊ feminas imperpetuū warantizabimus ⁊ pro hac remissione ⁊ quietaclamancia ac warentia iddem abbas ⁊ conuentus Glastonie dederunt nob' quadraginta marcas. In cuius rei testimoniū huic scripto sigillum nřm apposui hiis testibꝫ dominis Reginaldo de moun, Henrico de traci, Johē balon, Waltero de bathoñ tunc vicecoñ deuon', Willmo de leighe militibꝫ, Willmo le bray, Ricō de Craswelle ⁊ aliis.

ON THE MOUTH OF THE RIVER EXE.

BY W. A. E. USSHER, F.G.S.

By permission of the Director-General of the Geological Survey.

(Read at Paignton, August, 1878.)

THE embouchure of the river Exe lies between two faults—one at Exmouth, not shown in section; the other at Langstone Point, visible in the railway cuttings. Taking the pebble-bed of Budleigh Salterton as the base of the Keuper, and the underlying marls from Westdown Hill to Straight Point promontory as Middle Trias, the sandstones of Straight Point, and the intercalations of marl and sandstone between it and Exmouth, may be taken as passage-beds into the Lower Trias, the upper division of which consists of sandstone to the east of Exeter, and about Broadclist, Topsham, &c. The fault in Exmouth Shrubbery appears to cut out these sandstones, and to throw breccias, into which they pass downward, against the passage marls and sandstones. Upon crossing the estuary, we find Langstone Point composed of breccia exactly similar to that of Exmouth plantation. Here a fault, apparently reversed, brings up breccias, with beds of sandstone. Going toward Dawlish, the railway cutting is intersected by several faults, the general effect of which appears to be to a great extent compensatory; *i.e.* bringing up the sandstones cut out at Exmouth; for, immediately to the west of Dawlish beach, and in the adjacent bathing-cove, thick beds of red sandstone are found to overlie the breccia. If the faults in the railway cutting exposed an ascending series from Dawlish to Langstone Point, we must suppose that breccia is abnormally developed in this district in the uppermost part of the Lower Trias, a supposition not borne out by local analogy. It is probable that the breccias of Langstone Point and Exmouth were continuous in a synclinal trough, so that the initiation of the

river mouth would have been in softer sandstones occupying the centre of the curve.

ACTION OF THE SEA UPON THE TRIASSIC COASTS.

Formed of strata of such generally soft or friable material, it is not difficult to account for the comparatively even recession of the coast; yet a study of its irregularities and incipient headlands is by no means devoid of interest, showing as it does the difference between marine and subaerial denudation, and involving a study of the lithological composition of the beds. The southerly trend of the coast-line from Ladram Bay is caused by the calcareous concretionary matter, which intersects the Lower Keuper sandstones in a network of veins. A resumption to the westerly direction is observable between Otterton Point and Straight Point, owing to the readily disintegrable nature of the pebble-bed and the marls underlying it; yet we find that, traced inland, the pebble-bed occupies the most marked feature in the Triassic districts where merely acted on by subaerial agencies.

The projection of Straight Point is due to the harder nature of the sandstones of which it is composed. From thence to Exmouth the presence of sandstones in the marls has not been sufficient to counteract a westerly trend of coast. Langstone Point owes its existence to the peculiarity exhibited by the breccia of which it is composed; for the numerous hard contained fragments afford protection to the sandy matrix, from which they are weathered out in relief. To the same fact the projections of the coast as far as Clerk Rock may be attributed. The comparatively even coast-line from the Ness, Teignmouth, to Babbacombe is caused by the presence of hard breccio-conglomerates, with limestone fragments cropping out at the Ness, and occupying the whole cliff face at Watcombe and Petitor, &c.

GRAVELS (POST TERTIARY).

In the meeting of this Association at Torrington, my friend Mr. Parfitt figured and described some gravels under re-deposited Triassic material in the upper part of the railway cutting near Langstone Point. In De la Beche's *Geological Manual*, pp. 166, 167, I find the deposit described as "gravel of flint and chert and pebbles from the Triassic breccia, overlain by regenerated New Red Sandstone, and resting upon red sands and breccias of the Trias." In a foot-note he suggests the probable contemporaneity of these gravels

“with the Bovey coal deposit”—*Tempora mutantur*. Bovey was not known then as it is now, thanks to the labours of Mr. Pengelly.

From Langstone Point to the wooden bridge over the railway, not far from Dawlish, the railway cutting exhibits an intermittent capping of this gravel, attaining in places, as at two hundred and sixty yards from Langstone Point, to twenty feet in thickness. At this spot the section is as follows downward from the surface soil:

	feet	in.
Redeposit of breccia (small stones) . . .	2	0
Redeposited red sand . . .	about 8	0
Greyish and reddish loam . . .	about 15	0
Gravel, with occasional strips of brown and grey loam; larger stones, generally at or near the base, but sometimes distributed throughout, sometimes occupying im-	about 20	0
persistent horizons, in other respects unstratified . . .		

The termination of the gravel toward Dawlish is very obscure, owing to the difficulty of distinguishing the redeposited sand from Trias *in situ*, and perhaps to slipped materials obscuring the face of the cutting.

The unconformity of the deposit to the Trias on which it rests is very distinct in most cases.

Although, taken in detail, the gravel exhibits little regard to gravity* in the distribution of its constituents, local seams of somewhat finer material are occasionally observable, and show false bedding. This fact, together with the general disposition of the redeposited materials overlying the gravel, leads me to regard it, as a whole, as an unquestionable case of old fluvial deposition, bearing some resemblance to the river-valley gravels of the Otter, Creedy, &c., by whose banks the gravels are frequently shown overlain by a variable thickness of alluvial loam or clay. In many respects parts of the gravel terrace of the Exe, near Alphington, bear so close a resemblance to the Triassic breccias of the district, that a like resemblance in other places between the old alluvial deposit and its parent rock is not to be wondered at.

The range of Haldon on the west, and the pebble-bed hills of Woodbury Common on the east, furnish the natural watershed boundaries of the Exe estuary. Within these limits numerous traces of old river deposits occur, fragmentary it is true, but still bearing sufficient relations to the present configuration to warrant the conclusion that they are the relics

of the ancient river beds of the Exe and its tributaries, left at different levels in the formation of the present drainage system. From its position I am inclined to regard the Langstone Point gravel as an old deposit of the river Exe, dating back to a time when the course of the river ran in this direction, when its mouth extended much further seaward, and either before the present mouth had been initiated, or when it had not been excavated to within fifty feet of its present depth.

Near Kennford an old gravel of a tributary of the Exe is capped by redeposited breccia scarcely distinguishable from the subjacent rock.

Behind the Railway Hotel, at Dawlish, twenty feet of gravel is exposed, consisting of large water-worn fragments of grit, flint, and chert, apparently unstratified. I am forced to regard this gravel as an evidence of the former importance of Dawlish Water as a tributary of the Exe, at a time, in all probability, subsequent to the formation of the Langstone Point gravels (which for all we know to the contrary may have been contemporaneous with the raised beach formation), but long before the Triassic coasts had been worn back to their present bounds.

Patches of old river gravels occupying more exalted positions than those I have mentioned have been observed to the south of Dawlish. They are for the most part older links in the chain of subaerial denudation by which for ages the county was being slowly moulded to its present form.

I pass on now to a subject having a more practical bearing; namely, the present estuarine conditions of the Exe. Mr. Godwin-Austen was led to think that the presence of shells of *Macra* and *Tellina*, &c., in the Exe valley gravels at Alphington, were proofs of the prevalence of estuarine conditions higher up the river in comparatively modern geological times; and he attributed the cessation of those conditions to an oscillation of a few feet in the downward movement which led to the final submergence of the forests on our coasts. This oscillation was, he considered, further evidenced by the presence of rock platforms, or planed reefs, at spring-tide level, or a little above it. How far the Alphington deposits might be accounted for without invoking change of level by human agency in recent times, I cannot say; nor could I unhesitatingly deny that the rock reefs, of which I have seen many examples, may be portions of an uneven raised beach platform sloping seaward, and elsewhere worn away.

Such an oscillation—of from five to ten feet, as Mr. Godwin-

Austen supposed—would have a material effect in aiding the production of the Warren Sandbank ; whilst if we suppose that it has long since given place to a gradual subsidence, conditions unfavourable to its existence would doubtless lead to the gradual waste of the bank.

THE WARREN SANDBANK.

The changes which the Warren Sands have undergone since the year 1787 have been ably described by my friend Mr. Martin, in papers read before this Association in the years 1872 and 1876.

The river cliffs between Starcross and Langstone Point indicate an outflow of the river on that side in comparatively recent times, though probably long prior to the year 1611, at which time and subsequently, as Mr. Martin has shown, the balance of evidence is against an outlet by Langstone. We have no reason for supposing that during the existence of an outlet at Langstone the prevalent wind-waves were in a direction contrary to the present ; so that the very fact of an outlet, and its abandonment through the formation of a gravel and sand bar driven eastward, proves how fluctuating was the contest between river and sea, in which the latter proved victorious. Unless we suppose the prevalence of contrary winds, driving sand bars from the east westwards during the outflow of the river by Langstone, and its deflection through an alteration in the prevalent winds producing a contrary drift of shingle, I cannot but regard the desertion of the Langstone outlet as proof of the incompetence of the river to keep its seaward passage clear. Such incompetence would appear most comprehensible on the supposition that the volume and force of the river was lessened through a gradually diminishing rainfall. The direct outflow of the river once overcome, a threefold agency would be at work in the formation of the bank : first, the wind-waves transporting sand and shingle from Langstone Point, and the breakers banking it up ; next, the river depositing its mud and silt on the inner side of the bank, and gradually damming itself back ; thirdly, the wind blowing dried sand from the bank upon the ground thus being reclaimed.

There are three points of special interest put forward in Mr. Martin's papers : 1st, The comparatively unchanged condition of the inner boundary of the Warren ; 2nd, The gradual diminution and recession of its seaward bank, as well as the breaches effected therein, and the increased nor-

therly shifting of its eastern extremity; 3rd, The gradual diminution and final disappearance of the sandy islet between Exmouth and the eastern end of the Warren.

Had the volume of the Exe been no larger than it is now it is very difficult to account for the plain evidence of a former outlet, and that for a long period, by Langstone, but the formation of the bank would present no difficulty. The unchanged condition of the inner Warren for so many years certainly does not prove an increase in the volume of the Exe.

The destruction of the seaward face of the Warren appears to be due to a cessation or inadequate supply of such materials as were previously banked up by the wind-waves. To this, as well as to the sea gaining upon the river through the insufficient scour of the ebb waters, we must ascribe the turning-up stream and gradual waste of the insulated eastern end of the Warren. Either to deflections of the ebb scour, or to the greater power of destruction of the flood waters, the obliteration of the sandy islet, formerly situated between the Warren and Exmouth, is due. The supply of material to the bank has been for years insufficient to balance the constant waste by the waves, and so the materials are driven in upon the river waters, which are consequently shoaling up.

Mr. Martin has shown that the gradual diminution of the Warren is of anterior date to the construction of the South Devon Railway, though he conjectures that the sea-wall, in warding off the waves from the foot of the cliffs, and so preventing their degradation, and the consequent direct derivation of beach material, coupled with the effect of groins in retarding the passage of shingle from Dawlish, may have been instrumental in the comparatively recent rapid diminution of the bank. To remedy the evil by removing all obstructions to the free westward transport of shingle is impracticable, nor would such a remedy be effectual, as shown by Mr. Martin; hence we must conclude that the waste of the bank is due to other causes as well. Whether these causes are referable to prevalence of gales from the eastward or south-east, or to a slow and continuous subsidence, the remedies are similar in kind.

To form a dam of solid masonry all along the outer face of the Warren, to deflect the ebb waters into a narrower channel by reclaiming the river bed between the inner Warren and Starcross, might produce the desired result; and although no permanent result might be obtained if the waste of the bank is due to a subsiding movement, they might still avail for

centuries to come. It is not necessary for this generation to project permanent improvements which the better appliances of the future may supersede or obviate.

Narrowing the channel at the embouchure would tend to produce a far greater scour than is at present effected by the ebb waters; and this effect might be increased by the judicious use of basins or locks for the purpose of ponding back part of the flood waters.

The recent changes between the state of the Warren in 1872 and 1876, as Mr. Martin justly observes, prove that the procrastination of the application of engineering skill for the preservation of the bank renders such appliances more costly each succeeding year, by the increased amount of material necessary to fill the gradually-widening breaches.

DEVONSHIRE TOKENS.

PART IV.

BY H. R. GILL.

(Read at Paignton, August, 1878.)

SINCE Part III. of my *Devonshire Tokens* was published in our *Transactions* (vol. viii. p. 113), ten more seventeenth-century tokens of this county have been brought to light in different localities, which I will now describe. But besides them, I believe that I have discovered another Devonshire specimen, assigned by Boyne (page 468), in his standard work, to the county of Warwick; viz., to Austrey, a village near Tamworth. It was issued by "Nathaniell Sweet, of Avtry, 1658," and looking at the fact that there is no *s* in the name of the place on the token, and that our Ottery St. Mary—still locally called *Autry*—was so pronounced when the coin was issued, as we find by Richard Teape's token (see my first list, vol. v., p. 236, No. 191), on which the town is spelt "Avtery," I think it really belongs to Devon. Moreover Sweet is essentially a Devonshire name, as will be seen in looking over our local *Court Directory*; and if we refer to Colyton, in my first paper, we shall find that a token (No. 55) was issued by a "Nathaniell Sweet," the Christian name with double *l* being spelt the same as the one from "Autery." It is true there is a slight discrepancy in the initials, the former token having on it only N. S., whilst the latter has N. M. S., and sent out one year after the former; but in that important year (*to him*) he may have got married. Colyton and Ottery are not very far apart, therefore it is quite probable the issuer had establishments in both towns, as we know John Lethbridge had in four adjacent places; viz., South Tawton, Chagford, Moretonhampstead, and South Zeal. (See first list, Nos. 245, 300.) The recent additions, with the proposed transfer, will give the large number of three hundred and forty-one of these Devonshire tokens, or one hundred

and ten more than Boyne published in his standard work. They were all issued for *necessary change*, as is expressed on two of the Exeter pieces (Nos. 119, 120). Large as this number is, I believe there are still more left undiscovered in our more ancient places. One only of Hatherleigh, an old market town (see list, No. 333) has yet been found; but as its two nearest neighbours, Great Torrington to the north, and Okehampton to the south, had each seven tokens of that period, it is very likely some more may be found in the yet unexplored locality of Hatherleigh. I have lately acquired one of the rare Tavistock early tokens, by Richard Hutchings (see vol. vi., p. 162, No. 314), and find that the "arms" on the obverse are those of the Grocers' Company, one of the London Incorporated Trade Companies, the arms of which frequently occur on our seventeenth-century tokens. These arms are "a chevron between nine cloves, three, three, and three."

The nineteenth-century token, No. 30 (continued from vol. vi., p. 167), is one of those issued in this county in the early part of it by the Tavistock Iron Company, doubtless for the convenience of their workmen, at the period when regal copper money was so scarce. It is of full penny size, $1\frac{1}{8}$ inch diameter. The town where it was issued not being named upon it, the present generation would not have known whence it emanated had not my friend Mr. W. Gill, of Tavistock, told me it passed current for a penny throughout that district when he was a boy. I have the token in my collection.

SEVENTEENTH CENTURY DEVONSHIRE TOKENS NOT IN PREVIOUS LISTS.

BARNSTAPLE

331. O. RICHARD . WEBER . IN — A castle.

R. R . BARNSTAPLE . 1669 — HIS HALFE PENY. $\frac{1}{2}$

This token, recently found at Barnstaple, is by the same issuer as the farthing token, No. 22, in my first paper on the subject, published in our *Transactions*, vol. v., for 1872. The Castle represents the Borough Arms.

DODBROOKE

332. O. WILLIAM . MARKELL — 1666

R. (No Legend.) An ancient galley. $\frac{1}{4}$

This issuer was buried in his parish church, in the aisle of which is a stone slab with an inscription to his memory. I am indebted to Miss Fox's excellent volume on *Kingsbridge and its Surroundings*, for a description of the above token, which is the only one yet found at Dodbrooke.

HATHERLEIGH.

333. O. JOHN . GIDLEY. — 1665

R. OF . HATHERLEIGH — I . A . G

‡

The late Town Clerk of Exeter, so well known and respected, was, I presume, one of the descendants of this ancient Devonshire family. The token was kindly presented to me by Mr. F. Goulding, of Plymouth.

KINGSBRIDGE.

334. O. HEAD . OF . THE . MAYDEN. — The Mercers' Arms.

R. KINGS . BRIDGE . 1657. — I . M . H .

‡

The singular legend on the obverse of this token, which is, I believe, quite unique, evidently refers to the device, The Mercers' Arms; viz., the bust of the Virgin Mary, crowned, hair dishevelled, issuing from clouds. My description of it, together with those of Nos. 336, 337, and 338, are taken from some excellent pen-and-ink drawings of them by George Fox, Esq., one of our Members. The name of the issuer is not known.

335. O. JOHN . TRIPE . 1659. — A ship.

R. IN . KINGS . BRIDGE. — I . C . T .

‡

This token belongs to Mr. W. Gill, of Tavistock. The Tripe family is still to be found in South Devon.

MODBURY.

336. O. IONATHAN . ELLE. — A full-faced bust with pointed beard.

R. OF . MODBURY . 1662. — A roll of tobacco.

‡

In my first list, No. 170, a token by this issuer appears, dated 1664, and when they were exhausted, the following, four years later, was sent out.

337. O. Legend and device as on No. 336.

R. OF . MODBURY . 1668. — HB (filling the field, probably meaning I . H . E)

‡

338. O. N . S — R . S — S . R . (In three lines across field.)

R. MODBURY (In two lines.) — The Mercers' Arms. (‡ size.)

This may have been issued by a firm of *three* drapers, or the second pair of initials may have been those of the wife of N. S., the head of the firm of *two* partners; but it is not now known what their names were.

PLYMOUTH.

339. O. RALPH . GORDGE (*sic*). — Three gorges.

R. IN . PLYMOUTH. — R . M . G

‡

This token belongs to Mr. W. Gill, of Tavistock, who gave me the description. The three gorges (whirlpools) used as arms of the family were no doubt intended as a rebus on their name of Gorges.

340. O. IOSIAS . PICKES — An anchor with cable.

R. PLYMOUTH . 1657 — I . E . P

‡

This description was sent to me by Mr. Worth. These two recent additions make up the considerable number of thirty-five tokens issued in Plymouth.

Proposed transfer to Devon.

OTTERY ST. MARY. (?)

341. *O.* NATHANIELL . SWEET. — A man smoking.

R. OF . AVTRY . 1658 — N . M . S .

(Taken from Boyne, page 468, No. 18.) The Colyton token by N. S. is dated 1657, and, as before stated, he may have taken to himself a wife between the two issues, the M being the initial of her name.

NINETEENTH CENTURY TOKEN.

TAVISTOCK.

30. *O.* T . I . C (in cypher filling the field) 1812 (in exergue).

R. ONE PENNY TOKEN (in three lines). Edge milled.

In this last quarter of the present century a new class of tokens has sprung up in almost every town in the county, issued by co-operative stores, which I have not attempted to classify, since they are not in general use, but intended only for the customers of those establishments.

NOTES ON A CARVED STONE HEAD FOUND IN THE PARISH OF WHITSTONE.

BY THOMAS ANDREW, F.G.S.

(Read at Paignton, August, 1878.)

IN January last the Rev. Wilse Brown, Rector of Whitstone, was kind enough to show me a curiously-carved stone head (figures 1 and 2), with the request that I would endeavour, if possible, to obtain some clue to its origin and use. He informed me that the Rev. Charles Brown, his father, and late Rector of Whitstone, about the year 1840, found a child in a cottage playing with this head. The woman of the house said she found it in the "Castle Field" while picking stones. The rector gave her half-a-crown for it; had a plaster mould made from it, and gave casts to several of his friends.

The "Castle Field" is an enclosure in the parish of Whitstone, on the south of the high hill in that parish called "Waddlesdown." Waddlesdown is said to be a corruption of the old Saxon name "Wadledon," meaning the "higher ridge-land." A road, said to be a Roman road, separates "Castle Field" from Waddlesdown; but notwithstanding the name of the field, there is no vestige of a camp, or of a fort of any kind. It may be observed that Whitstone Church is three and a quarter miles from Exe Bridge, and is about 676 feet above the sea-level. The highest point on Waddlesdown Hill, a quarter of a mile farther, is 840 feet above the sea-level, and completely overlooks and commands the city of Exeter, or such portion thereof as was formerly comprised within the walls of the ancient city.

My first impression, on seeing the carving on the top of the stone head, was, that it was very, if not precisely, similar to the pattern of the border of the tessellated pavement found in Bishopsgate Street, London, a few years ago, and now on exhibition in the Guildhall Museum; and that impression was confirmed by a subsequent comparison. The stone

CARVED STONE HEAD, FULL SIZE.



Fig. 1. Face.

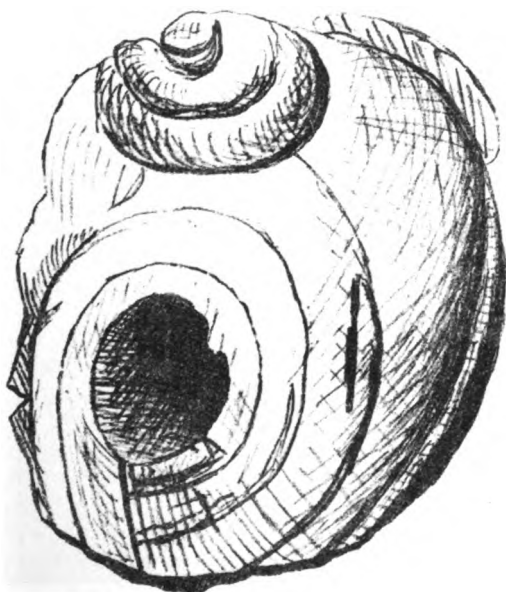


Fig. 2. Side view.



Fig. 3. Mexican Goddess of War.

itself being difficult to determine, I took the opportunity, when attending the annual meeting of the Geological Society, to show it to Professor Judd, F.R.S., who pronounced it to be gneiss, but not from any British rock.* Mr. Judd, seeing that it was a very curious head, desired to be allowed to show it to some authorities. Mr. John Evans, F.R.S., was most positively of opinion that it was neither Roman nor British, but he was unable to determine its origin or use. Subsequently Mr. Judd showed it to Mr. Franks, of the British Museum, and keeper of the Christy Collection at Victoria Street, Westminster, who thought it might be Carrib or Mexican. This led to my having a personal interview with Mr. Franks and Professor Judd. I then explained that the stone was found on a very high hill in the immediate neighbourhood of Exeter, in a field, which, because of its name and locality, was in all probability anciently the site of a camp or a fort; that although the carvings on the head might not be Roman, notwithstanding their close resemblance to those found in Roman pavements, yet it was a remarkable circumstance that the carving was also identical with the sword-hilts or handles of the ancient Danes; and taking into consideration the fact that Exeter had thrice been besieged by the Danes, and on the last occasion by Sweyne, in the year 1003, for two months, might not this stone be Danish in its origin? Mr. Franks at once replied that he was thoroughly acquainted with Danish weapons of war, and also with the contents of the very interesting museums at Copenhagen and at Stockholm, but, in his opinion, there was nothing about the stone of a Danish character. He then showed me the facial section of a human skull, completely inlaid with turquoise, the stones being mostly of the size of a pea, and of a bluish colour. This skull, it is supposed, was used by ancient Mexico for the ornamentation of its gods. (See fig. 3.) The huge basalt idol, or goddess of war, Teoyaomiqui, which eighty-seven years ago was found in the ground of the great teocalli at Mexico, a figure of which has been given by Humboldt, was in all probability decorated with two of these, one at the front and the other at the back of the waist. (See fig. 3.) Some authors have believed this idol to be composed of three gods—the god of war Huitzilo-

* Gneiss is a name given by the German mineralogists to a schistose or slaty granite abounding in mica. It is a member of the metamorphic rocks. By some geologists, gneiss has been called secondary granite. I have since showed the stone to a Mexican mining agent of great experience, who says the rock is very abundant in Mexico, and the miners call it "porphyry."

pochtli ; his wife Teoyaomiqui ; and Mictlanteuctli, the god of hell. The god of war, the most esteemed of all the Mexican deities, was represented and worshipped under many different shapes, with attributes of skulls, serpents, and arms ; from which it may be fairly inferred that skull ornamentation was very general among the Aztec races. The nearest approach in the Christy Collection to this curious head was one in pyrites, of about half this size, with a hole drilled laterally through the head as in this object (fig. 4) ; but this was without any carving. Mr. Franks with myself then made a diligent examination of the various objects of Mexican interest in his most valuable collection, with a view of identifying, if possible, the carvings, and with some success, as the following illustrations will show. Figures 5 and 6 are "malacates" or spinning-stones of terra-cotta, with different ornaments, round on one side and flat on the other, from $1\frac{1}{2}$ to $2\frac{1}{4}$ inches in diameter. Figure 7 is a large bowl in the shape of a flattened ball $5\frac{1}{2}$ inches high, and about 9 inches in diameter. It is red-coloured, polished, and decorated in a style which may be called true Aztec. It will be perceived that each object has a coiled carving resembling that on the stone head. A Peruvian warrior in terra-cotta, in the Christy Collection, has the same characteristic figures. What these coilings symbolize must necessarily for the present be matter of conjecture, but undoubtedly they have their meaning ; and any student who would give this department careful investigation might be amply rewarded for so doing.

The conclusions to which I have arrived are the following : First, that the stone head was Mexican in its origin ; because heads and skulls of this or like formation were most probably objects of adornment, and sacredly regarded by the curious and little-known races of that remarkable country ; because the material of the head is undoubtedly from a Mexican rock, and because of the similarity of the carvings to those on innumerable objects of interest in the Christie and other collections, and which are beyond all question Mexican ; but how or in what way the head could have been transported to Waddlesdown it is most difficult to determine. It may have been brought by a sailor in ancient times, or it may have been brought over in ballast, and picked up by some one at Exeter or at Topsham, and subsequently thrown into the dung-heap as a worthless thing ; but I fear this must necessarily remain a matter of conjecture.

In the second place, the skulls which ornamented the Mexican gods were *human*. They were generally the facial

Pyrites Skull.



Spinning Stone.



Fig. 5.

Spinning Stone.

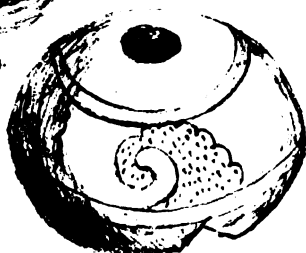


Fig. 6.

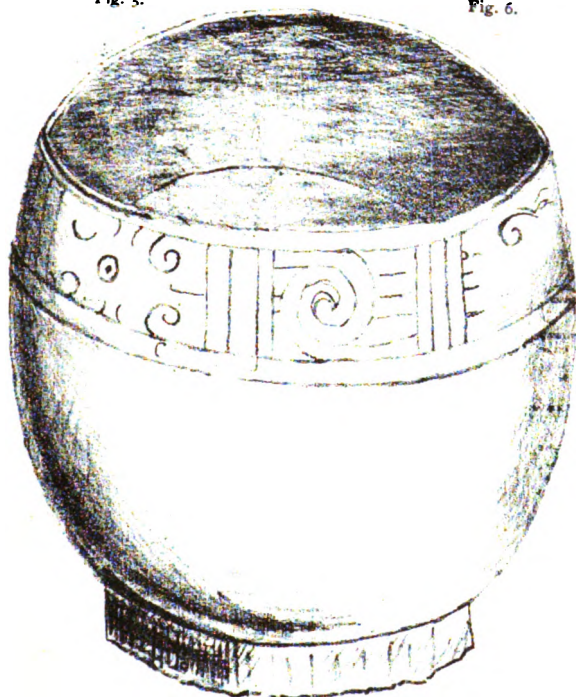


Fig. 7. Terra-cotta Cup.

section, and were covered with precious stones, as illustrations 3 and 4 and the two skulls in the Christie Collection evidence; but the one before us is of stone, and not at all adapted for such a purpose. It is too large and heavy for an amulet. The pyrites head in the Christie Collection might have been so worn; but I scarcely think this could have been. What then was its probable use? And here I am unable to speak with certainty; my conjecture must be simply and purely hypothetical. The object of supreme worship of the Aztec races was connected with war, the sacrifices therewith involved the loss of much human life. Hideous skulls were the chief adornments; and it does not appear to me unreasonable to suppose that the priests used such an object as this as the head of a mace, by fixing it to the end of a pole, to be borne before them in their processions or their ceremonies. The Christian bishop has his staff of office, and why not the heathen priest some rude emblem, such as this, of that office and worship which undoubtedly involved a fearful sacrifice of human life?

"WRECKAGE," AND LORD DEVON'S RIGHTS TO THE SAME, ON THE SOUTH DEVON COAST.

BY A. W. HURRELL, B.A.

(Read at Paignton, August, 1878.)

OUR Association has, I observe, frequently chosen for its annual meeting a town within easy access of the sea-coast. I have thought therefore it would not be uninteresting to the members if I selected a subject for a paper immediately connected with the sea and its action.

By the common law of England, if a ship was lost at sea, but the cargo or a portion of it came to land, the goods saved belonged to the Crown. The strictness of this prerogative was however relieved by very early charters and statutes, and the owners of shipwrecked goods were allowed to retain them if they could identify them. By later acts provision was made for rewarding those persons by whose labour and enterprise shipwrecked property had been saved. The right to unclaimed "wreckage" was originally vested in the Crown, but by special grants and by prescriptive right, in a great number of instances, it has been claimed by lords of manors where their lands happen to border the sea. This right however does not necessarily pass under a general grant of manorial royalties, and if not enjoyed by prescription, or alienated by express words of transfer, it continues to remain in the Crown as its ancient prerogative franchise.

This right in the olden time, although not much thought of in some localities, proved in others to be of considerable value; and I have no doubt when lords of manors were calculating their respective incomes, they did not entirely ignore the probabilities of gain which might accrue in the event of wrecks occurring on their privilege in the forthcoming years. This right is still to a certain extent valuable, although considerably diminished of late years by the estab-

lishment of lighthouses on the coast by the Board of the Trinity House in London, which happily has saved a great number of wrecks. The means of communication also, and the speedy modes of progress which we now possess, enable shipowners either to be present themselves, or to commission agents on their behalf to attend, and put in their claims. A few years after the passing of the Merchant Shipping Act of 1854 an inquiry was instituted throughout the kingdom relative to the respective rights of lords of manors to unclaimed wreck. For this purpose two commissioners from the Board of Trade sat at Plymouth to inquire into the rights of the lords of the different manors on the South Devon coast. It is as to the rights claimed by Lord Devon in respect of his manors that I wish to call your attention. The claims made by Lord Devon before the commissioners, and the title to which have been admitted by the Board of Trade, are—

1st. The right of wreckage in front of the Hundred of Coleridge, which abuts upon the coast of South Devon, and extends from Dartmouth Castle or thereabouts to Kingsbridge Quay or thereabouts ; and,

2nd. "From the point of junction of the parishes of West Alvington and Salcombe, on the western shore of the Kingsbridge estuary, round the coast of Bolt Head and Bolt Tail, to a point a short distance to the north-west of the point of junction of the parishes of Thurstlestone and Aveton Gifford on the eastern shore of the Avon estuary." The claim to this latter privilege was made in respect of the lordship of the following manors ; viz., Ilton, Salcombe, Collaton Prawl, Portlemouth, East Sewer, Bolberry Beachum, Bolberry Allen, Galmpton, South Huish, and South Milton. The receivers of wreck on the coast before named are directed by the Board of Trade to give up possession of all unclaimed wreck, after the usual term of one year, to Lord Devon's agent. Among the manors before mentioned the manor of Ilton Castle has perhaps the most interesting history.

It is situate about three miles from Kingsbridge, and the castle was undoubtedly at one period a place of considerable importance, as shown by the remains still in existence.

In the reign of Henry II. the manor belonged to the Bozuns, a co-heiress of which family brought it to the Cheverston family. From them it came to the Courtenays, Sir John Cheverston having settled it, in case of his death without issue, on his father-in-law, Hugh Courtenay, Earl of Devon.

Sir John Cheverston had a grant from the Crown in 1335 to build a castellated mansion. In this grant the name of the manor is written Yedilton.

Lysons, in his *Magna Britannia* (vol. vi., A.D. 1822), says the manors of Malborough, and seven other manors in this parish which I mentioned just now, belong to Lord Viscount Courtenay, who holds a Court of Admiralty for an extensive line of coast.

King Edward I. (A.D. 1274) issued his commission to inquire by what authority every person claiming *jura regalia* (of which wreck of the sea is one) in any part of the kingdom held such rights. The extracts of the returns to the commission go only to show, that as such right was not mentioned in the commission, it was at that time enjoyed by the Crown.

"Thurlestone was enjoyed by Iudæl de Totnes, by gift of the Conqueror, which he held after two hides. Afterwards it was Bozun's inheritance, and by a daughter of Bozun came to Cheverston, and so to the Courtenays."

The first mention I can find as to Lord Devon's right appears to be in the third year of Henry V.'s reign, A.D. 1416, where, at an inquisition held after the death of Richard Courtenay, Bishop of Norwich, it was stated that he held on the day of his death the manors of South Hywishe and Malleburgh (now Malborough)—"*cum wreceo maris*, knights' fees and services of tenants thereto belonging"—also Bolberry and others.

There appears to be very little doubt as to the existence of an express grant at one time, there having been found on a previous investigation of Lord Devon's claim to wreckage a schedule of papers at Powderham, which mentions a grant of wreck at Thurlestone, Huish, and Salcombe.

This grant, however, cannot be found at the Rolls. In the absence, however, of such "express grant," the court rolls of the said manor will doubtless go very far to evidence a prescriptive right. We find deeds of confirmation of Edward VI.'s and Elizabeth's reigns, which were granted by the Crown at the request of Sir William Courtenay, Knight.

The original deed of confirmation has been kindly lent by Lord Devon to the writer of this paper. Lord Devon's ancestors held on the occasion of any wreck, or at certain periods, Admiralty courts at the various villages on the sea-coast within the manors over which they claimed royalty, and set down a code of laws, the breaking of which involved certain punishments. I will read one of these charges.

A CHARGE IN A COURT OF ADMIRALTY.

"What is inquirable in this Court is as follows: This Court is a Royal privilege granted from the Crown to the subject.

"Wherein are inquirable all matters relating to the seas as wreck, which are three sorts—as 'Flotsam,' 'Jetsam,' and 'Lagan.'

"'*Flotsam*' is when a ship sinks, and the goods that swim.

"'*Jetsam*,' when a ship is in danger, and the goods are cast into the sea to lighten the ship.

"And '*Lagan*' is when the ship is in danger that they cast out the heavier goods into the sea to lighten the ship, and put a buoy or a light thing that swims to it to take it up again—if they are saved, and find it again.

"Whosoever finds any wrecked goods ought to carry it to the chief inhabitants of the town or place next to where it was found, and there to remain until a claim be made to it, either by any person saved alive belonging to the ship, or their wives, children, or executors, owner, merchant, or such a good title to the land.

"And if no claim be made within a year and a day, then it must be delivered to the Admiral, or such as hath the Royal privilege of the Royalty, paying reasonable for their trouble for salvage.

"If any man or living thing escape to shore alive, it is no wreck.

"If any one should have a lanthorne or make a light in order to subject them in danger of shipwreck (if no harm happen), yet it is felony.

"If any one convey secretly any of the goods, if it be the value of a nail, it is felony. Wrecked goods do not pay customs.

"If any cast out any ballast from any ship or boat within the port of Salcombe contrary to the statute forfeits 3s. 4d. (and by an order formerly made in this Court). If it be let lie there forty-eight hours, shall forfeit 40s.

"If any one fineth another out of this Court, if it be here determinable, forfeits 40s.

"If any one doth labour within this Royalty between sun and sun on the Sabbath-day forfeits 40s.

"If any one ashore salt pilchards, and suffer the guts to be thrown or go into the salt water forfeits for each offence 3s. 4d.

"If any one launch any boat within this Royalty on a Sunday before midnight forfeits 40s.

"If any one forceably takes another's hale (haul), or disturb him therein, forfeits 40s."

From the foregoing you will notice that Admiralty Courts at that time had exclusive jurisdiction in all matters connected with the sea, and that they possessed unlimited power with regard to the administration of punishment on the

violation of any charges or laws. In fact such power did they possess that a quotation in the Hundred Roll (of the time of Edward I.) says, that Viscount Courtenay obtained the power of inflicting capital punishment from the Cheverstones, which power I have no doubt continued in the family until the last two or three hundred years.

The steward of the manor generally held an Admiralty Court on the occasion of any wreck. I will read a copy of the presentments made at a court in the year 1737. It is thus headed :

"A Court of Admiralty held at Hope, within the parish of South Huish, in the Right of the Honble. Sir William Courtenay, Bart., the one and twentieth day of April, in the tenth year of the reign of our Sovereign Lord King George II., and in the year of our Lord God 1737, which is a Royal privilege granted from the Crown of the Royalty extending from Shagg Rock, in Bantham River, to Salt Rock, or Stone, in Salcombe River, and as far at sea as a man can see an umber barrel in the sea from the top of the hills on horseback."

Then follow the twelve names of the jury.

"We present George Hamblin of Orford Jefferd (Aveton Gifford) for taking up of a graper about fifty weight at the place the *Dagger* was cast away at Bantham (1736) harbour.

"We present a tierce of wine taken up in Salcombe by Roger Jarvis, Thomas Goss, and Joseph Fairweather, now in the possession of the Lord of the Royalty to agree the salvage.

"We present a mast of forty foot long taken up by Joseph Whiting of S. Milton at Thurlestone.

"We present a copper teapot and one pewter dish taken up by James Jarvis.

"We present John Piles of Kingsbridge for taking up a small cannon gun where the *Dagger* was lost."

Names of persons signing presentment.

From this you will perceive that men as well as goods were presented for any theft or infringement of the local statutes. The fact of it being the custom of allowing salvage at the rate of one-third the value of the property saved, no doubt made villagers and others, then commonly termed "wreckers," very pleased to see wrecks; and there seems no doubt that they used foul and improper means for securing the same. Before the introduction of lighthouses for the preservation and safety of our ships, the system of lighting beacon fires on the most dangerous and prominent rocks of

our coast was in vogue, and these beacon fires materially assisted mariners in the navigation of their ships. And the system was so well carried out, and navigators put such implicit faith, and depended so entirely on the appearance of these lights, that they shaped the course of their vessels accordingly. If therefore false lights were exhibited, a wreck would be pretty sure to follow; and I am afraid the dwellers on the coast of our county in former times were guilty of many of the charges made against them as to false lights. Now, however, we are more civilized, and our efforts, one and all, are made for the purpose of saving life and property, and not to cause its destruction.

About one hundred and fifty years ago wrecks were exceedingly numerous, as proved by the Court Rolls of this Admiralty Court. At that time, on a south-west gale, wreckers were always on the alert, and wrecks frequently occurred. I will conclude my paper by reading you the copy of a letter from Mr. George Taylor, dated 16th January, 1753, to the Hon. Sir William Courtenay, Bart., to show you to what an extent wreckers carried on their depredations about a century since :

“Totnes, 16th January, 1753.

“HONOURED SIR,—I hope you, my lady and family, had a safe journey to Town, after such bad weather, as probably you had on your road.

“I'm to acquaint you that last Wednesday night, about ten, a Hamburgh-Dutch galliott, burden about one hundred tons, laden with wine, brandy, coffee, indigo, and one bale of saffron, bound from Zante to Hamburgh, was stranded on Thurlestone sands, within the precincts of your Royalty. Thursday morn I went thither to do what lay in my power to prevent the country from plundering her and to save the cargo, and have the pleasure to let your honour know that more than three parts of four is so done. The lost cable and anchor I've secured (as usual) for your use; but as to what share of the salvage (extracted from the expenses of saving) is due to you I'm at a loss to judge at, especially as the ship is not broke to pieces by the waves, and the master and men all saved, and not deemed wreck.

“As your Honour is in Town you may advise what is most proper to be done by me for your interest. The Custom House officers of Plymouth, Dartmouth, and Salcombe all assisted in saving the goods. The cargo is valued at about £3,000. A great part of the goods are in the custody of Mr. Adams and others of your tenants. A great part of the goods were saved Thursday and Friday from being plundered by my being there, on account of my acquaintance and knowing most of the persons then there; but Saturday evening

there were not less than ten thousand people who came from remote parts, in order to plunder the remainder of the cargo, which they had certainly done if the Plymouth official had not ordered a party of soldiers to attend, who opportunely came just as the mob was about to make a disturbance; by accident one of the ringleaders was killed, he being drunk and falling upon one of the soldier's bayonets fixed on the gun. This and other circumstances gave a damp to the rest of the rioters; and more goods have been saved out of this vessel than all the ships that have been stranded for fifty years past.

"I am, your Honour's most faithful servant,

"GEO. TAYLOR."

"P.S.—I'm but just come home weary and tired, wet every day into the skin; but helping the distressed makes an atonement."

On the 13th of June last the Freemasons of England presented to the National Lifeboat Institution a new lifeboat, to commemorate the safe return of the Prince of Wales from India. This boat has been stationed at Hope Cove, one of the most dangerous parts of the coast within Lord Devon's wreckage rights.

His lordship kindly gave the ground for a site for a boat-house; and I feel assured that he would far rather, in case of need, see the lifeboat employed on her errand of mercy than consider any possible gain he might have in case of a wreck.

COLLECTANEA CURIOSA DEVONIENSIA.

BY PAUL Q. KARKEEK.

(Read at Paignton, August, 1878.)

UNDER this title have been gathered together some few odds and ends of matters relating to Devon, and Devonshire history, which though in themselves interesting, are not of sufficient importance to be treated in separate papers.

The Capture of Torrington. 1646.

In a paper entitled "The History of Great Torrington," by the Rev. F. T. Colby, B.D., F.S.A. (*Trans. Devon. Ass.*, vol. vii.), the following statement occurs: "The next day a terrible occurrence took place. A number of prisoners were confined in the church, where was the magazine with about eighty barrels of powder. These, whether by accident or design, were set on fire, blew up the church, and a great part of the houses of the town," &c. The writer of the paper was in error as to the day on which this catastrophe happened. In "Fairfax in the West" (*Trans. Devon. Assoc.*, vol. viii.) allusion is made to the explosion; and, quoting from Fairfax's letter,* I describe the event as taking place even during the retreat of the Royalists, and the entry of the Parliamentarians; that is to say, during the fight. Rushworth's *Collections* has no letter but that of Fairfax from Torrington; but in the *Sixth Report of the Historical Manuscripts Commission*, p. 100, is given a letter from Rushworth himself, describing the combat, and the unfortunate incident of the blowing up of the church; and this account confirms the view expressed by me in "Fairfax in the West," that it was during the capture of the town, and not on the next day, that the explosion took place. In the other respects this letter of Rushworth's is very interesting.

"Feb. 17. Letter from J[ohn] R[ushworth], at Torrington, to [the Speaker of the House of Commons]. On Saturday, the 14th, we marched from Crediton to Chimligh (Chumleigh),

* Sprigge.

ten miles; the day very rainy, and the ways deep. On Sunday we marched two miles, when we had intelligence that Lord Hopton was at Torrington; and hearing that there was a troop of horse at Burrington, the General sent a party against them, who routed them, and brought Lieutenant-Colonel Dundashe prisoner, mortally wounded, to Ring's Ash (Ash-reigny). This is the Dundashe who ran to the enemy when the Earl of Essex's forces lay about Thame. Another party of horse, sent out at the same time, also routed some of the enemy, and shot Major Brettee, who, being well mounted, escaped. Meantime a broken bridge had been made up, and three regiments of horse, and three of foot marched some four miles towards the enemy; the rest returned to Chimligh with orders to march by break of day. We hoped that the enemy, after the alarms we had given them, would have taken their resolution before morning, whether to go east or west, which we were very desirous of knowing. February the 16th the General, with his forces, joining those that had gone on to Ring's Ash, drew up his army in battalia on the moor, within five miles of Torrington, and then advanced towards the town. After some skirmishing a party was sent against Squire Roll's house, which the enemy quitted without resistance. After some further skirmishing between the forlorn hopes on each side, the enemy drew out their foot into the closes, about a quarter of a mile from the town; our forlorn hope then lined the hedges, and so the men faced one another within half musket-shot for about two hours, exchanging coarse language, and bullets now and then. When all the horse and foot had come up they were drawn out in Mr. Roll's Park, and supports immediately sent to second the forlorn hope. It was now growing dark, and after a council of war the General and others rode up to the forlorn hope to see the posture of the forces, and find out whether the reports of the flight of the enemy were true. Six dragoons were ordered to creep under a hedge near to the barricadoes to see if the enemy would answer. The fire was returned by a very sharp volley, upon which the forlorn hope, seeing the dragoons engaged, also gave fire. The enemy replied all along their line, and our reserves coming up to support the forlorn, the whole army advanced, and so, about eight at night, the battle was begun about six fields from the town. We beat them from hedge to hedge into their barricadoes, which our men carried after about an hour's fighting, after several repulses, and so forced the enemy into the town; whereupon the horse were set in, and charged the enemy in

the streets, and after hard fighting drove them out of the barricadoes at the further side of the town. Many prisoners were taken and put into the church; but many more threw away their arms and escaped in the darkness. No sooner were we possessed of the town than the enemy's magazine, about eighty barrels of powder, which were in the church, blew up; whether fired by accident or on purpose we cannot yet learn. Many of the prisoners were killed, many houses defaced, and the whole town shaken. Some of our men in the churchyard were killed, and two great pieces of lead fell within half a horse's length of the General. One whole barrel of powder was blown out into the street without taking fire. The enemy seeing the explosion, made another charge under John Digby, brother to Lord Digby, but were repulsed by our musketeers; and our horse, instantly advancing, began the pursuit at eleven at night, and I hope will give a good account of the business. Thus hath it pleased God to rout Lord Hopton's forces, foot and horse. We trust soon to follow them, and reduce the remnant. We hear that they were from two thousand five hundred to three thousand men. They fought valiantly, and defended their barricadoes at push of pike, and with the butt end of their muskets, till our men got over a hedge and flanked them, which forced them to give way. The old Cornish foot, and Greenville's and Goring's old soldiers, English and Irish, were engaged, but are now scattered. The hedges in these parts are so thick that each hedge was a bulwark for the enemy. There are many wounded, but few slain on our side; of the enemy many. You shall have further particulars hereafter. Let the glory be given to God.

"Torrington, Feb. 17, 5 in y^e morning. We hear some of the horse are going towards Barnstaple. Colonel Cook is that way; but Colonel Whaley should quarter nearer Newbury, to follow any that may come from Oxford, and not divert our horse, that are on so probable a design to settle the West of England."

Whitley. The letter from Prince Maurice, authorising Sir Edward Fortescue to repair and fortify the old Bulwark, afterwards called Fort Charles, at the mouth of Kingsbridge river, is dated from Whitley, Dec. 9th, 1643. It has been suggested that this Whitley is the farm bearing that name near Kingsbridge.

I am of opinion that the place from which Prince Maurice dates his letter is Whitlegh, or East Whitley, in Budeaux,

about four miles from Plymouth. The head-quarters of the Royalist army during the siege of Plymouth was stationed at Widey, about a mile and a half from Whitlegh. A very considerable post, however, was at St. Budeaux; and Whitlegh must have been a very convenient rendezvous for the officers of both divisions. Prince Maurice was presiding over the siege, and during the early part of Dec., 1643, there was plenty to do, so that it is not at all likely he would have been so far from Plymouth as Kingsbridge. The probability then seems to be in favour of Whitlegh, or East Whitley, being the Whitley from which the letter was dated.

Bastard. At the close of the Meeting of the Devonshire Association at Kingsbridge, an excursion was made in a steam-boat down the Kingsbridge river, and the luncheon took place at Splatt Cove. In the course of the day Mr. W. A. Jarvis, of Higher Bolberry, related the following local legend relating to the spot:

"The family of Mr. Bastard, of Kitley, Yealmpton, near Plymouth, are supposed to have come over from Normandy with the Conqueror, and the ancestor of the family had command of one of the ships which brought the army across the Channel. The fleet was scattered by a gale, and this particular ship made the shore at the entrance of Salcombe harbour, and the leader and his men landed at the very spot on which we are now assembled. This spot, together with the field, in all about an acre, is still held by the Bastard family; and although their land in this neighbourhood was sold or offered for sale about thirty or thirty-five years ago, this little isolated spot was retained, and it was supposed at the time, by those acquainted with the legend, that the reason for its being retained was the family tradition attached to it."

Now, although the legend is very interesting, there does not appear to be much foundation for it.

No chronicler mentions the gale which is supposed to have scattered the fleet; and even if a landing did take place in Splatt Cove, no one can be expected to believe that the invaders made a stay here, because the conquest of Devon did not take place until 1068, two years after the battle of Hastings. The name of Robert the Bastard does not occur in any of the lists of the Norman heroes who fought at Hastings, though it does in *Domesday*, and then as holding from the king the following manors; viz., Bachestane, Harold-sore, Dunistanetone, Blackeurde, Fitorde, Stanlius, Bicheton, Merwi. Splatt Cove is situated in the manor of West

Portlemouth, in the parish of Malborough, and neither of the manors of Robert the Bastard can be supposed to answer to that of West Portlemouth.

According to Lysons, certain property in the parish of Malborough came into the Bastard family by purchase, after it had been possessed by the families of Haris, Davel, and Batson, and this may have been acquired at the same time.

Amy Robsart. There seems to be a general impression that this far-famed lady is of Devonshire origin, though the only authority for it is the celebrated romance *Kenilworth*. The Committee on Devonshire Celebrities, in their first report, presented last year at Kingsbridge, have placed this name on the list, and therefore in future one must be supposed to claim the lady in question as a Devonian. But in reality there is no more evidence that she was ever in this county than that she visited the castle of Kenilworth during the visit of Queen Elizabeth. All those who have written on this subject, particularly Mr. George Adlard, Mr. Pettigrew, and more recently the Rev. Canon J. E. Jackson, assign Stanfield Hall, in the county of Norfolk, as her probable birthplace. Sir John Robsart was Lord of the Manor of Sedistern, in Norfolk, and married Elizabeth, widow of Roger Appleyard, of Broken, in the same county. Roger Appleyard left Stanfield Hall to his widow for her life, and at her decease it was to descend to his son, John Appleyard. In a pardon granted to Sir John Robsart for certain political actions of a treasonable nature, he is described as "late of Windham, in Norfolk, *alias* of Stanfield, in the parish of Wymondham." This would show that he was residing at his wife's own house, Stanfield, and here in all probability it was that his only daughter Amie, or Amye, was born.

There is no mention of the name of Robsart in the *Heralds' Visitation of Devon*, 1620, nor in Westcot or Risdon's *Survey*, nor in Pole's *Collections*; and, as far as historical data go, there never would have been, but for the poetic licence of Sir Walter Scott; and why he so generously gave our county a heroine who belonged to Norfolk will for ever remain a mystery.

ON THE ORIGIN OF THE OSSIFEROUS DEPOSITS IN THE ORESTON CAVES.

BY R. N. WORTH, F.G.S.

(Read at Paignton, August, 1878.)

IN the course of his "Notes on Recent Notices of the Geology and Palæontology of Devonshire," published in the *Transactions of the Devonshire Association* for 1877, Mr. Pengelly, F.R.S., has done me the honour to comment at considerable length upon my paper on the "Geology of Plymouth," published in the *Journal of the Plymouth Institution* for 1876. There is no reason why I should review the whole of the ground therein traversed by Mr. Pengelly; but upon one matter the difference between us is so great, and the particular point so important, that some reply seems necessary. I refer to the question of the origin of the ossiferous deposits in the Oreston Caves. Before passing to that special subject, I may however be permitted to express my regret that by what is evidently a looseness of statement, since it led Mr. Pengelly to draw a different conclusion from my words than I meant them to convey, I have been understood to state that the "amount and direction of the dip of the Cleavage [of the slates at and near Plymouth] coincide commonly with those of the Bedding." When I wrote that "the bedding and cleavage [of those rocks] have a general coincidence," I certainly did not mean that they were generally *identical*, but simply that they generally dipped in nearly the same direction, and to nearly the same amount. I intended resemblance; not identity.

It is unnecessary to describe in detail the character of the Oreston caves and their contents. The fullest account of both will be found in Mr. Pengelly's cavern literature, published in our *Transactions*. It is sufficient for my present purpose to note that there are fissures in the limestone rock at Oreston, near Plymouth, which have from time to time

been found to contain the bones of the mammoth, rhinoceros, bear, lion, hyæna, and other animals. In the limestone rock on the opposite side of the Cattewater, on Plymouth Hoe, there are also fissures, for the most part filled with clay, sand, and stones of undoubted Dartmoor origin—at least I understand that in this assignment I have the support of Mr. Pengelly himself. In my paper on the “Geology of Plymouth” the following passage occurs: “These deposits are by no means isolated phenomena in connection with the Hoe. Sand was found in digging the foundation of Elliot Terrace adjoining; but that was largely mixed with pebbles. At the south-eastern corner of the Hoe, near the little cavern which is used as a tool-house, the fissures in the rock contain pebbles precisely similar in character to those above. In such fissures we have the authority of Dr. Moore for saying that bones were found representing with tolerable closeness the Oreston fauna, including remains of the elephant, rhinoceros, and bear. Then again in 1808 a deposit of sand was found on the Western Hoe, fifty feet above high-water mark, which contained the jaw of an animal with teeth two inches long, and a large vertebra $9\frac{1}{4}$ inches by $4\frac{1}{4}$.”

Hereon Mr. Pengelly joins issue; and having examined abstracts of the papers of Dr. Moore describing one set of discoveries, and an account of the discovery of 1808, comes to the conclusion that I was in error when I quoted Dr. Moore as saying that bones were found in these fissures “representing with tolerable closeness the Oreston fauna.” For this conclusion three reasons are assigned.

A. That Dr. Moore “makes no mention of fissures at all;” but describes two sets of deposits, the higher identical in its constituents with the fissure accumulation described by me; the lower a raised beach.

B. That although Dr. Moore describes “his Raised Beach fauna” as similar to that of the Devonshire caverns, “we are not informed by whom the identifications were made, and also that only the genera, but not the species, are named.” Moreover, before Dr. Moore’s statement of the similarity can be unhesitatingly accepted, an “explanation must be given of the fact that the hyæna, the most prevalent *genus* of Kent’s and Yealm Bridge Caverns, did not occur on the beach on the Hoe, and of the companion fact that the ox found in all the caves named by Dr. Moore was also absent; and even then a trustworthy identification of the *species* as well as the *genera* will be required.”

C. That even if the Hoe species were identical with the

cavern, and found in the fissures, it would be unsafe to "infer thence that the fissure and cavern deposits were contemporary, for the remains were found *in* the Cave-earth, but . . . *on* the accumulations on the Hoe. They were coeval with the Cave-earth, but more modern than the Raised Beach."

To each of these objections there is, I think, a sufficient answer.

a. It is perhaps one of the inevitable dangers of an argument which is based on the assumption of the proof of a negative, that Mr. Pengelly should have formed his opinion as to Dr. Moore's views on insufficient data—the papers of Dr. Moore, and the papers only. I grant that the Raised Beach deposit, so-called, was really a raised beach, and so described by that gentleman. But this was by no means the only discovery of a similar kind made in connection with the Hoe, quite apart from those which Mr. Pengelly cites. The museum of the Plymouth Institution contains a number of specimens deposited there by Dr. Moore himself, and by him labelled as from the Hoe Raised Beach *and Fissures*. This is conclusive evidence then, on the authority of Dr. Moore, though it finds no mention in his papers, that the Hoe fissures were ossiferous, as stated by me. Since then bones of a similar character have occasionally been found in fissure pockets in the limestone of Cattedown.

b. Dr. Moore is of course responsible for the identification of the genera of the remains found. His general accuracy can however be tested by the examples preserved in the museum. Moreover these dispose at once of the crucial test applied by Mr. Pengelly to the theory of the similarity of the (so-called) Raised Beach and cavern fauna—the absence of relics of the *hyæna* from the remains found on the Hoe. The *hyæna* is amongst them. In other words, "the fact that the *hyæna*, the most prevalent genus of Kent's and Yealm Bridge Caverns, did not occur . . . on the Hoe" (I simply omit the words "on the beach") "is not a fact." So also with the ox.

c. The argument against the contemporaneity of the fissure and cavern deposits is to a certain extent met by the proof that the fissures were really ossiferous; because whatever the position of the Raised Beach remains to that deposit, those from the fissures must have been embedded *in* the deposits therein. And this brings us to a further objection to my argument. Mr. Pengelly says, "The period during which the Raised Beach was formed was certainly not subsequent to the Cave-earth era, for the species of mammals found *on*

the beach were either identical with those of the Cave-earth, or they belonged to an earlier fauna; the latest known British elephant and rhinoceros being the *E. primigenius* and *R. tichorhinus* of Kent's Hole." To my mind nothing can be clearer than the fact that the remains being found *on* the beach proves the beach to be of that subsequent origin which is essential to my theory, and which Mr. Pengelly denies. That the date of their deposition in that place was later than the formation of the Beach requires no argument; but to hold that the remains were either contemporaneous (in part) or subsequent seems to me akin to a contention, for example, that the Liassic fossils which bestrew the beach at Lyme Regis are the remains of animals inhabiting our present seas. I account for the presence of these bones *on* the beach by their having been washed out of an ossiferous fissure or fissures. The presence of the whale would create no difficulty.

Mr. Pengelly declines "very decidedly to accept the fluviatile hypothesis" which I thus expressed: "I hold it to be capable of demonstration, that the level wall-like character of our limestone—and this is no mere local phenomena, but may be observed in Torbay—is due to the action of water; that our limestone ridge is, in short, a platform of denudation, formed by a great river which probably followed in the main the course of the present Tamar, though it is quite possible that ice may have aided in producing this result." He holds that "an agency is required that would apply to several and widely separated localities—from the confines of Cornwall to those of Dorset and Somersetshire, and to heights varying from the one hundred feet level of Plymouth Hoe to the eight hundred feet of Haldon; that was capable of transporting the wreck of Dartmoor rocks as far as its levelling action has been traced, and that would allow the formation of lithodamous perforations at a height more than double that of the Plymouth plateau. In short, I see no reason for abandoning the opinion I expressed in 1864, as already stated, that 'the grinding action was that of the breaking waves,' and that the various terraces, from the level of Haldon to that of the now submerged forests, 'are indications of periods of intermittence in a long series of upheavals.'"

That *something* must be allowed to marine action in the production of the phenomena which Mr. Pengelly describes all must admit; but I, like him, see no reason to depart from the opinion I have already expressed. Such distinctive Dart-

moor detritus as we find on the Hoe can have but one origin, and that directly fluvial. Moreover, the hypothesis that the Tamar was the agent has been greatly strengthened since I wrote by the discovery therein of a pebble of basaltic character, which can only be attributed to the rocks in the vicinity of Brent Tor. At the present moment Dartmoor detritus is being deposited by Dartmoor streams at all levels in the county below that of Dartmoor itself; and this process must have been in progress ever since Dartmoor had existence. For the assumption that a "geologically very modern river" transported Dartmoor detritus to Haldon I am not responsible.

Finally, my hypothesis with regard to the introduction of the osseous remains in the Oreston caves and the Hoe fissures was thus stated: "And now to return to the bone caverns. Their contents must have been carried into them by waters which flowed at a much higher level than those of the Tamar and the Plym, or by waters which flowed when the land was at a much lower level. Here then, is my hypothesis. The similarity in character and method of occurrence of the two classes of deposits leads me to hold that the caverns are in the main contemporaneous with the surface formations which I have described, and date back to a time when the limestone rocks which enclose the fissures were but slightly raised above the waters, and when therefore nothing was easier than the introduction into the caverns of bodies of animals swept down the stream, probably in time of flood; just as they are commonly swept down the rivers of tropical countries in the present day. This view has the double advantage of reconciling difficulties, and of agreeing with the generally observed facts." Mr. Pengelly's objections to this are five-fold.

A. He asks for instances of bodies being engulfed in fissures traversing the *bottoms* of rivers. I simply refer to the washing of the bodies into the fissures in times of flood. We all know that at such times *débris* of various kinds collect in the land hollows, especially as the waters subside, and where they have neither power enough nor depth sufficient for the further transport of bulky bodies.

B. It is next stated that it is not "easy to see why the Oreston fissures should receive such a number and variety of osseous remains, whilst those on the Hoe should receive absolutely none." I have shown that this is an error.

C. Mr. Pengelly remarks that "the Raised Beach era must have been contemporary with or prior to that of the cave

mammals; hence at that time the country might have been from thirty to forty feet, but not anything like one hundred feet, lower than at present," and argues that, without making "a lofty cataract a part of the machinery," the Plym or the Tamar could not have had the plateau of the Hoe as its rocky bottom, when the sea was cutting a platform in the cliff of the plateau, or depositing a beach "on such a platform at from sixty feet to seventy feet vertically below the stream itself." If the Raised Beach era was *subsequent* to that of the cave mammals, this objection has no force.

D. Mr. Pengelly denies the similarity of the deposits in the Hoe fissures and the Oreston caves. "Whilst the prevalence of Dartmoor detritus was the most striking fact in the fissures on the Hoe, there was no such material in those at Oreston." There are several points at which it would be difficult to decide with certainty that the contents of the Hoe fissures were of Dartmoor origin, if the enquirer stopped there; for the dissimilarity existing at different localities on the Hoe is quite as remarkable as any that I can imagine between the Hoe and Oreston. And, with all deference to the high authority of Mr. Pengelly, I cannot see in this dissimilarity any adequate reason for abandoning a conclusion to which so many other arguments seem to point. That one set of causes may produce deposits of very different character may be seen at the present moment on the shores of the Sound, and even in localities quite as closely adjoining each other.

E. Pointing out that my hypothesis assumes that "the time represented by the Oreston fossils was not long enough to produce any such changes in the physical conditions of the district as would affect the machinery by which the caverns received the organic remains," Mr. Pengelly cites the opinions of eminent palæontologists that the Oreston cave mammals belonged to distinct faunas, and therefore probably to such very dissimilar conditions of physical geography as would absorb more time than would be consistent with the preservation of this machinery. But does it necessarily follow that this variation in the character of the components of the fauna involves this extension of time? We may have all the conditions necessary for such variation absolutely co-existent within a comparatively limited area, where difference of level induces variation of climate. The great mountain chains of the present day afford all the proof of this that we can need; and it singularly happens that in the section of his Fauna of Devon which includes the mammals, in our last

year's volume, Mr. Parfitt illustrates this very point by a reference to the Altai Mountains.

In conclusion, Mr. Pengelly utterly fails "to see what *difficulties are reconciled* by the author's hypothesis, or the *observed facts* with which it *agrees*;" nor does he "see the least occasion for supposing anything more than a series of gaping fissures traversing a table-land above the reach of flooded rivers—though not necessarily or probably of great elevation—into which some animals fell and were killed, and others retired to die; where perhaps a few were dragged or pursued by beasts of prey; whilst the rains of Devonshire washed in at least some of those which died near at hand on the adjacent plateau."

The "observed facts" I have endeavoured briefly to indicate. The main difficulty to be reconciled is the difficulty of believing that contemporaneous and similar deposits in fissures so closely correspondent as those on the Hoe and at Oreston were due to causes so utterly dissimilar as fluvial action in one case, and casual falling into open fissures on the other; for I am unaware of any evidence that the Oreston caves were ever the resort of living animals, or at all approached the character of dens. Did such evidence exist, it would indeed be a strong argument against my hypothesis; but in its absence I know of none. That water did play some part in depositing the Oreston bones in the position in which they were found is not denied; and I think that the cautious conclusion of Mr. Pengelly, as the result of his visit to Oreston in 1859, when he declined to say "whether animals fell or were dragged in, or whether the bones found there were wholly or partially the remains of dead animals washed in," far safer, and far more in accordance with the teachings of modern geology, than his return to the antediluvian theory of Buckland, minus the deluge.

THE FAUNA OF DEVON.

LEPIDOPTERA.

BY EDWARD PARFITT.

(Read at Paignton, August, 1878.)

DEVONSHIRE, so far as I am aware, can boast of only one fossil Insect; and that, geologically speaking, does not date very far back in time. It was discovered in the Lignite beds of Bovey Tracey during the investigation of that deposit by Mr. Pengelly and Professor Heer. The paucity of Insect forms in this interesting formation is very remarkable, as compared with a similar deposit at Ceningen examined by Professor Heer, in which he discovered no less than 5081 specimens, belonging to 844 species; viz., Coleoptera, 518; Neuroptera, 27; Hymenoptera, 80; Diptera, 63; Hemiptera, 133; Orthoptera, 20; and Lepidoptera, 3 only. And Dr. Hagen discovered, in the Lignites near Bonn, about 90 species, besides about 125 more species from other deposits of brown coal.

In the adjoining county of Dorsetshire, in the Purbeck beds, vast numbers of insects have been discovered; all, however, belonging to those groups having hard or coriaceous wing-cases, such as the Coleoptera, or beetles; and Hemiptera, or plant bugs; and a few of the harder Neuroptera, of which the dragon fly may be taken as the type.

"The fossils," says Professor Westwood, "show abundant evidence of the presence of numbers of lignivorous species, such as the Elateridæ and the Buprestidæ; but we nowhere find amongst them traces of the great longicorn and lamellicorn beetles. Herbivorous insects also occur in considerable numbers; but we do not meet with the gigantic grasshoppers and locusts of tropical climates."* In all the mass of insect remains entombed in the Purbeck beds, not a single relic

* *Jour. Geol. Society*, vol. x.

of Lepidoptera, or butterflies and moths, has been found; but this perhaps is not to be wondered at when we consider the peculiar structure of the formation, being a sort of estuarine deposit, and the fragile and delicate structure of the Lepidopterous forms.

The evidence arrived at, from an examination of this vast array of fossil insects in this formation, is, that they represent a temperate climate, when they were being collected at the probable mouth of a large river, or that they were brought down from some hilly or mountainous district whose climate was temperate, though the valleys may have been tropical.

If we trace the insect Fauna still deeper and earlier into the earth's crust—the Lias, for instance, of Gloucestershire—no less than six species of dragon-flies have been exhumed by the Rev. R. Brodie. The genera to which these belong still exist in this country. The same may be said of most of the other genera belonging to other orders of insects found in this formation, and out of all these there is not a single butterfly or moth. But when we consider the numbers of delicate Dipterous insects that have been preserved, both in the Purbecks and in the Lias, even to the fragile and short-lived gnat, we are led to wonder at the absence of the gorgeously-painted scale-wing family, considering how generally abundant they are, both in tropical and temperate climates, and even extending far beyond the Arctic circle.

If we pursue our insect Fauna still further and deeper into the crust of the earth, to the Carboniferous or coal formation proper, and even deeper into the Devonian, we still find forms very like those that are living at the present day. Thus Professor Huxley says, in his lectures delivered in America: "There are to be found numerous insects allied to our cockroaches; there are spiders and scorpions of large size, the latter so similar to existing scorpions that it requires the practised eye of the naturalist to distinguish them. Inasmuch as these animals can be proved to have been alive in the Carboniferous epoch, it is perfectly clear that, if the Miltonic account be accepted, the large mass of rocks, extending from the middle of the Palæozoic formations to the uppermost members of the series, must belong to the day which is termed by Milton the sixth."

We have then plenty of evidence of the existence of insects, extending from the Carboniferous forests through all the various changes and vicissitudes that the earth has undergone; but at what period they were really introduced upon the scene it is impossible to tell.

A writer in the *Cornhill Magazine* for May of this year, page 538, says: "Few if any birds or mammals lived amongst those rank jungles of more than tropical growth. . . . Not a single moth or butterfly flitted among the primeval tree-ferns and pines, as they flit in countless myriads now on the banks of the Amazon, or the mountain slopes of Ceylon or Jamaica." All we can say of this is, that we have no proof. Insects may have been abundant on the dry land, even in the neighbourhood of the marshy tracts in which grew the tree-ferns and gigantic horsetails, &c. This writer's argument is, that the vegetation being of what is termed flowerless plants, there would of course be no honey or nectar-secreting organs, and consequently no food for the nectar-eating or imbibing insects. But there is another side to this question. All the Lepidoptera are not provided with the organ of suction, nor are they provided with organs for mastication, and there is a probability that the organ for imbibing the nectar may have been developed in after time, when flowering plants began to appear, and when insects as fertilizing agents became necessary to the perpetuation of the plants.

We have seen that spiders have been found fossilized in the coal of the Carboniferous period, both in this country and in America;* and if the habits of the spiders differed not from those of the present day—and from their organization they did not—they must have fed upon insects the same then as now; so that I see no reason whatever for saying that moths and butterflies did not exist at this early period of the world's history, although they have left no impress on "the sands of time."

The intimate relationship between insects and the flowering plants of our own time has been so fully and beautifully shown by experiments prosecuted by Mr. Darwin, that it only requires a reference from me. In some of the Orchidaceæ the structure is so peculiar that it needs also peculiar means to bring about fertilization in these plants, and the organization is found in the insects inhabiting the locality or region in which these particular orchids grow.

In 1857 I published the discovery of the pollen masses of an orchid found attached to the proboscis of *Anthrocera trifolii*. This attracted the attention of Mr. Darwin, who was then working at the subject of the Fertilization of the Orchidæ through the agency of insects, which he published in 1862. (See page 36 of that work.)

I have stated previously, that it is impossible to say at

* *Geological Magazine*, vol. ix., pl. 9, p. 385.

what period of the world's history the Lepidoptera were introduced. The first indication—but this is doubtful—of the remains of one was found in the Carboniferous in America; but the most perfect, and beyond all doubt, was found in the middle of the Lower Oolites, a formation termed Stonefield Slate, in Oxfordshire. It is the anterior wing of a large butterfly, and named *Palæontina oolitica* (Butler). Mr. Butler says: "Though a British fossil insect, this species belongs to a group completely tropical; its nearest allies are the genera *Caligo* *Dasyophthalma* and *Brassolis*, all three essentially tropical American genera." Mr. Butler goes on to say that *P. oolitica* is especially interesting, as being the oldest fossil butterfly yet discovered; the most ancient previously known to science having been found in the Cretaceous series (white sandstone of Aix-la-Chapelle), whilst the bulk of the known species are from the Lower Miocene beds of Croatia. It is also interesting as belonging to the highest family of butterflies."*

The species *Neorinopsis sepulta* (Bois) is wonderfully perfect. The Upper Cretaceous white sandstone of Aix-la-Chapelle has preserved the creature, or at least the wings, in a remarkable manner, so much so that even the coloration and eye-like markings are almost as distinct as when the insect was alive. It is also very remarkable that both this species and the one from the Oxford Stonesfield Slate should belong to tropical American forms; or, as Mr. Butler says, "Its (speaking of Boisduval's species) nearest ally is *Neorina Lowei*, a common Bornean species."

These butterflies, it would seem, if any reliance is to be placed on the nearest of kin inhabiting or being found in similar climates, would point to a different state of things pertaining to the Coleoptera, &c., found in the Purbeck beds, as these are pronounced by one of the highest authorities to represent a temperate climate. The butterflies, however, coincide so exactly with the Cycadaceous plants or palms, &c., in the Lower or Stonesfield Slate formation, as do also Boisduval's species agree with the sub-tropical vegetation of the Lower Miocene period; so that one bears out the other in a remarkable manner—that is, the vegetation and the creatures which flit about amongst such vegetation.

Entomologists as a rule have been more twitted by the generality of people than perhaps any other students of nature, it being considered *infra dig.* for men to busy themselves about such apparently trivial things as insects. Chasing

* *Geological Magazine*, vol. x., p. 3.

a butterfly or a moth has caused the student to be pronounced little better than insane, and this recalls to mind the well-known satirical lines written by Dr. Wolcot (Peter Pindar) on Sir Joseph Banks :

“ A moth should flutter, would the man sit quiet ?
Forgetting state affairs, the knight
Would seize his hat with wild delight,
And, chasing, make the most infernal riot ;
O’turning benches, statesmen, every thing,
To make a prisoner of the mealy wing.”

Although insects may appear trivial in themselves, their numbers are sometimes so great as to force their importance upon the most casual observer. Whether insects have become more numerous on the Continent of Europe and in America than before, I am not able to say ; be this as it may, the governments of both Germany and of America have now their State Entomologists, whose business it is to give and direct the best means of keeping down, if not entirely destroying, the insects injurious to the various crops. In Germany, a part of a forester’s education is the study in their various stages of the insects that are injurious to the woods and forests. And within the last two years a society of ladies and gentlemen have associated together to study the habits and peculiarities of some of our insects, noxious or injurious to the various crops, both of the garden and the farm. This association is likely to do a great deal of good by directing attention to the habits of the various species mentioned, and, what is more, very nicely figured, in the prospectus issued. By directing the farmer and gardener to the particular species, they are then better able to know how to cope with them, and to know those that are their particular enemies and those that are not. For instance, if the farmer knew the parasites that destroy the caterpillars of, say, the common Cabbage Butterfly, he would be very unwise to destroy his benefactor ; but without knowing his friends from his foes, he would be just as likely to kill the one as the other.

The destruction of Rooks by poisoning, and the killing of other birds, either by the gun or destroying their nests, allowed the insects to increase very considerably. The destroying of the balance in Nature’s laws very soon told its own tale, and Legislation had to step in to prevent the further destruction of the insectivorous birds. For nine or ten months in the year these creatures live almost entirely on what is noxious to the cultivators of the land. Our Australian and

New Zealand colonists have been obliged to import some of these farmers' and gardeners' friends.

Would it not be well to instruct the young in our schools in the knowledge of the common insects injurious to the crops, and of the relation of the birds to the insects? The knowledge could be imparted to them by having the objects themselves hung up in a case in the room. The minds of the young might also be disabused of such superstitions as the following, which is credited to Devonshire:

"One of the superstitions prevailing in Devonshire is, that any individual neglecting to kill the first butterfly he may see for the season will have ill luck throughout the year.* The following recent example is given by a young lady. 'The other Sunday, as we were walking to church, we met a man running at full speed, with his hat in one hand and a stick in the other. As he passed us he exclaimed, "I shan't hat 'en now, I b'lieve." He did not give us time to enquire what he was so eagerly pursuing; but we presently overtook an old man whom we knew to be his father, and who, being very infirm and upwards of seventy, generally hobbled about by the aid of two sticks. Addressing me, he observed, 'My zin a took away wan a my sticks, miss; wan't be ebble to kill 'n now though, I b'lieve.' 'Kill what?' said I. 'Why 'tis a butterfly, miss—the furst hee'th a zeed for the year; and they zay that a body will have cruel bad luck if a ditn' en kill a furst a zeeth.'"

There is one other superstition connected with the Lepidoptera, which I have never seen in print, and that is, that the serpentine markings seen so abundantly in some seasons on the leaves of brambles and roses, but more especially on the former, when they are very abundant are said to be indicative of wars and general ill-luck to the nation. This superstition is not confined to Devonshire; for I have heard it in other parts of the kingdom. These markings, or rather the coincidence of these markings, represent, I believe, a very deeply-rooted superstition which pertains more or less to the whole human race, the story of the serpent. To work this out would be foreign to my subject; but the cause of these markings in the bramble-leaves must be laid at the door of one of my subjects; namely, the larvæ of a lovely little moth, one of the smallest moths in the world, which rejoices in the name of the 'Diamond-barred Pigmy,' *Nepticula aurella* (Fabricius.) The larvæ of this moth mines the bramble leaves in the manner observed, by eating away the parenchyma, or the

* R. Hunt, *Popular Romances*, v. ii., p. 243.

substance of the leaf lying between the two cuticles. The latter soon becomes dry and bleached by the sun; the markings then have somewhat the appearance of small silver serpents on the leaves.

The Insect Fauna of Devonshire I believe to be very rich, both in numbers and in species. One of the most beautiful of our indigenous insects is, I fear, now entirely lost; but I cannot say whether this is to be attributed to collectors or to sea-birds, as we have no insectivorous birds that would attack so large a caterpillar or moth. I do not know at what date this insect finally disappeared, but it had apparently grown very scarce at about 1793. In Donovan's *British Insects*, vol. iii., it is stated that Mr. Curtis, the author of the *Flora Londinensis*, found four of the caterpillars "last summer." This would be about the period indicated above; but it must again have increased in numbers to enable Mr. Raddon to supply the various cabinets with specimens. At last, however, it finally disappeared altogether. From the number of Devonshire species of which I have been able to obtain a knowledge, and which are principally contained in my own collection, and with the kind assistance of several friends in the cause of this section of entomology, I have been enabled to present a catalogue of one thousand one hundred species. The number of species recorded for the whole United Kingdom is about 1880.

It is to be regretted that Devonshire entomologists have not paid more attention to the Tortrices and the Tineina; for, so far as I am aware, Mr. D'Orville and myself were the only collectors of these groups. I am therefore fully aware of the imperfections of this section of my catalogue. There is a rich field open for observers in this direction. If some of the fair sex would turn their attention to the rearing and studying these gems of the Lepidoptera they would find it a healthful pursuit, as it would take them into our beautiful lanes, woods, and moors, and the preservation of these sparkling atoms would compensate them for the time bestowed to collect them.

At the end of this catalogue will be found a list of those species that have been taken or observed on Lundy, for which I have to thank H. G. Heaven, Esq., the proprietor of the Island. And it is with very great pleasure I record the names of those gentlemen who have helped me with lists from distant parts of the county, without whose assistance my catalogue could not have been so full as it is, and more especially in localities for the rarer species. Those from the

Barnstaple district have been kindly supplied by Gervaise F. Mathews, Esq., late of H.M.S. *Britannia*, now of the ss. *Sumatra*; those from the Plymouth district by George Carter Bignell, Esq.; and those from the Torquay district by J. Buckton, Esq. I am also indebted to the Rev. J. Hellings for his kindness, and to Mr. J. Rowdon for his list of species captured principally in the neighbourhood of Exeter. The late J. C. Dale, Esq., of Glanvilles Wooton, very kindly placed in my hands his notes on the rarer species of Insects captured by him in Devonshire during the many visits of his long entomological career; and my old and valued friend the late H. D'Orville, Esq., of Alphington, near Exeter, also gave me notes of some of the rarer species he was fortunate enough to take in his own garden. His garden was planted with food plants to attract the butterflies and moths, and it is astonishing to think of the number of species that were attracted in this way. What with this, and what with the number of species that came to "sugar" on the trees in his orchard, his garden and grounds were quite alive with moths and butterflies.

CATALOGUE.

WITH NOTES AND OBSERVATIONS.

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Sub-kingdom, ARTICULATA.

Section, INSECTA.

Order, LEPIDOPTERA, *Linnaeus*.Section, RHOPALOCERA, *Boisduval*.Family, PAPILIONIDÆ, *Leach*.Sub-family, PIERIDI, *Stephens*.Section, DIURNA, *Latrielle*.GENUS, GONEPTERYX, *Leach*.RHAMNI, *Linn.* Brimstone Butterfly.*West. and Hump.*, Brit. Butt., t. 1, figs. 7-10; *Morris*, Brit. Butt., t. 3.

This is generally the earliest butterfly seen on the wing in the spring, the specimens having survived the previous winter. The larvæ feeds on the common *Rhamnus frangula*, growing on the borders of our woods and copses.

GENUS, COLLAS, *Fabricius*.EDUSA, *Fab.* Clouded-yellow Butterfly.*West. and Hump.*, Brit. Butt., t. 2, figs. 1, 2, 3, 4, 8; *Morris*, Brit. Butt., t. 4.

As a rule this beautiful insect appears only towards the end of summer (that is, in August and September), and is then seen flitting about our clover-fields, mostly along

the coast line or within a few miles of the sea. But this year (1877), from some unaccountable cause, the insect has appeared in great numbers all over the southern and eastern counties, including our own county, from June 7th, on which day I saw specimens flying over the fields of *Trifolium incarnatum* at Pinhoe, and a few days afterwards in the marshes at Topsham. Mr. W. Buckler, writing in the *Entomologist's Magazine*, vol. xiv. p. 40, says: "In this neighbourhood (Emsworth, Hampshire), during the past and present week, *Edusa* has appeared in great numbers, culminating perhaps on the 11th instant (viz., June), when they were seen flying in all directions." The specimens I saw were evidently faded, from which I presume they were hibernated specimens; but whether they were British-born I have my doubts. They might, it is true, have survived our winter, which was as a whole a mild one, the mean temperature ranging from 51° in December; January, 46°; February, 51°; March, 50°; April, 53°; May, 54°; June, 69°: so that they might have borne this temperature very well.

HELICE, *Hüb.*

West. and Hump., Brit. Butt., t. 2, f. 8.

This is a rare variety, but has been taken in the neighbourhood of Plymouth by Mr. J. J. Reading, and at Sidmouth and Teignmouth; at the latter place by Mr. R. C. R. Jordan. Mr. G. F. Mathews tells me that he took eleven specimens in one day near Start Point, and saw many more, in August, 1876. Four specimens were taken near Exeter in August, 1877.

CHRYSOTHEME, *Stephens.*

Illust. *Haust.*, pl. 2, fgs. 1, 2 (not of Boisduval); compare *West. and Hump.*, fgs. and translated description, p. 18; *West. and Hump.*, t. 3, fgs. 1-3.

Taken in the Plymouth district, but very rare. Buckfastleigh, Mr. J. W. Stroud.

IMMACULATA.

Mr. J. J. Reading says: a form of the female, and a rarity. Ground-colour of the typical form, but differing from it in having the border of the wings *non-spotted*, and the hind wings more powdered with black. The abdominal channel is also paler, and freer from scales than is usual in the type.

Two specimens have been taken on Staddon Heights by Mr. McLachlan.

HYALE, Linn. Pale Clouded-yellow Butterfly.

West. and Hump., Brit. Butt., t. 2, figs. 5-7; *Morris*, Brit. Butt., pl. 6.

Rare. Has been taken at Torquay and at Sidmouth by Mr. E. Johnson; at Babbington by Dr. Battersby. Mr. G. Carter Bignell tells me that this was plentiful on the race-course at Totnes in 1870.

GENUS, **APORIA**, *Hübner*.

CRATÆGI, Hüb. Black-veined White Butterfly.

West. and Hump., Brit. Butt., t. 7, figs. 5-8; *Morris*, Brit. Butt., pl. 6.

Exceedingly local, and rare, and, so far as I can learn, the only spot known for this species in the West is Moretonhampstead. In an annotated copy of *Turton and Kingston's Natural History of the District*, in the handwriting of its late owner, R. T. Abrahams, Esq., it is stated, "Taken by Mr. Williams, near Moreton."

GENUS, **PIERIS**, *Schränk.*

BRASSICÆ, Linn. Large Garden White Butterfly.

West. and Hump., t. 4, figs. 1-5; *Morris*, Brit. Butt., pl. 7.

This is one of the most destructive insects in our gardens to all the cabbage tribe. It is double-brooded, appearing first in April and May, and again in August.

RAPÆ, Linn. Small Garden White Butterfly.

West. and Hump., t. 5, figs. 1-5; *Morris*, Brit. Butt., pl. 8.

Generally more abundant than the former, and equally destructive to the same plants. It is double-brooded, the same as the one above.

NAPI, Linn. Green-veined White Butterfly.

West. and Hump., t. 5, figs. 7-10; *Morris*, Brit. Butt., pl. 9.

Common everywhere; larvæ feed on the same plants as the two former. These butterflies have a natural enemy, which ought to be encouraged as much as possible. It is called *Microgaster glomeratus*. The insect itself is very small, but it deposits a great number of eggs in the larvæ of this butterfly, and when the *Microgaster* larvæ are full-fed they eat their way out through the skin of the victim, and each then spins a little cocoon of pale yellow silk, which remains attached to the dead larvæ of the butterfly. When all have spun up, they form quite a little heap of silken cocoons. These should be preserved.

*Var. BRYONIA, Godart.**West. and Hump.*, t. 5, fgs. 11, 12.

Taken at Egg Buckland by Mr. T. R. A. Briggs, June 22nd, 1835.

DAPLIDICE, *Linn.* The Bath White Butterfly.*West. and Hump.*, t. 6, fgs. 6-10; *Morris*, Brit. Butt., pl. 10.

In all probability a Continental visitor, as single specimens only are seen very rarely. A specimen is recorded in the *Zoologist*, vol. ii. p. 398, 1836, as having been taken in Roseberry Wood, near Exeter.

GENUS, *ANTHOCHARIS, Boisduval.*CARDAMINES, *Linn.* The Orange-tipped Butterfly.*West. and Hump.*, t. 6, fgs. 1-5; *Morris*, Brit. Butt., pl. 12.

Common round the woods and lanes of Exeter from May to July.

GENUS, *LEUCOPHASIA, Stephens.*SINAPIS, *Linn.* The Wood White Butterfly.*West. and Hump.*, t. 6, fgs. 11-13; *Morris*, Brit. Butt., pl. 11.

Found about the end of May floating gracefully along in the glades of our woods. The species is scattered, but not abundantly, all over the county. This is perhaps the most delicate and fragile of the whole group.

Var. B. Without the dusky spots on the anterior wings, and only a little powdered with dusky atoms at the base of the wings. In the cabinet of Mr. J. Rowdon, jun., Exeter. It was taken in Fordlands Woods.

Family, *NYMPHALIDÆ, Swainson.*Sub-Family, *SATYRIDÆ, Stephens.*GENUS, *ARGE, Schrank.*GALATHEA, *Linn.* The Marbled White Butterfly.*West. and Hump.*, t. 17, fgs. 1-6; *Morris*, Brit. Butt., pl. 13.

This must be regarded as a scarce species with us. One specimen taken on the cliffs opposite the Mewstone, along the coast from Dartmouth to Babbington, and in a limestone quarry at Berry Pomeroy. I used to take it in a hilly grass-field below Perage House, Fordlands, Exeter, some few years ago. The field was afterwards cultivated, and the habitat destroyed. It has been taken at Sidmouth by Mr. E. Johnson, and at Axminster by the Rev. Z. J. Edwards; by Mr. G. C. Bignell on Homer Down. A new locality has been discovered for this species in this neighbourhood, in a hilly field about

half-way between Exeter and Stoke Canon, where they have been taken in some numbers this season (1877). I took it this year at Kenton, in July.

GENUS, *LASIOMMATA*, *Westwood*.

ÆGERIA, *Linn.* The Speckled Wood Butterfly.

West. and Hump., t. 17, figs. 7-10; *Morris*, Brit. Butt., pl. 14.

Abundant in all our woods, copses, and tall hedges throughout the county, from the end of April to August.

MEGÆRA, *Linn.* The Wall Butterfly.

West. and Hump., t. 18, figs. 1-5; *Morris*, Brit. Butt., pl. 15.

Very common in meadows and gardens, lanes and woods throughout the county, from April to June, and again in August.

GENUS, *HIPPARCHIA*, *Fabricius*.

SEMELE, *Linn.* The Grayling.

West. and Hump., t. 18, figs. 6-10; *Morris*, Brit. Butt., pl. 17.

In rocky and stony places, in more or less abundance throughout the county in July and August. Bolt Head, plentiful, August 3rd, 1877. I have a variety of the male of this species with only one ocellus on the anterior wings beneath. There is the faintest indication only, scarcely discernible, on one wing, and on the other it is quite absent.

JANIRA, *Linn.* The Meadow Brown Butterfly.

West. and Hump., t. 20., figs. 1-5; *Morris*, Brit. Butt., pl. 19.

This is perhaps the most abundant British species, occurring generally in profusion in our grass-fields, from the end of June to September.

TITHONUS, *Linn.* The Gate-keeper Butterfly.

West. and Hump., t. 19, figs. 3-7; *Morris*, Brit. Butt., pl. 18.

Quite as abundant as the former, and found in the same places, and at the same time.

HYPERANTHUS, *Linn.* The Ringlet Butterfly.

West. and Hump., t. 20, figs. 6-9; *Morris*, Brit. Butt., pl. 15.

Not so abundant as the preceding. At the same time numbers of specimens are to be seen in lanes near woods, from June to August. Varieties of this species are rather frequent. I have one with only two ocelli on the anterior wings beneath, and another with only two

on one anterior wing, and three on the other, the posterior one being very small. In this specimen the two larger ocelli, both on the anterior as well as the posterior wing, show through to the superior surface, but not so conspicuously as on the inferior side.

GENUS, *CÆNONYMPHA*, *Hübner*.

PAMPHILUS, *Linn.* The Small Heath Butterfly.

West. and Hump., t. 22, fgs. 1, 2; *Morris*, Brit. Butt., pl. 21.

This is a common species, and generally distributed throughout the county. As a rule, this species does not come down into the low meadows and grass-fields like the three former ones, but is found more on heathy and dry places.

Var. B. With the apical ocellus on the anterior wings totally obliterated. Taken on Haldon. In my own cabinet.

Sub-Family, *NYMPHALIDI*, *Stephens*.

GENUS, *APATURA*, *Ochsenheimer*.

IRIS, *Linn.* The Purple Emperor Butterfly.

West. and Hump., t. 16, fgs. 1-5; *Morris*, Brit. Butt., pl. 36.

This fine insect I believe to be very rare in Devon. I once saw it at Dunsford Bridge, but did not capture it; and Mr. W. Powley informed me he had seen it in the woods near Starcross.

Sub-Family, *VANISSIDI*, *Stephens*.

GENUS, *CYNTHIA*, *Fabricius*.

CARDUI, *Linn.* The Painted Lady Butterfly.

West. and Hump., t. 15, fgs. 7-10; *Morris*, Brit. Butt., pl. 34.

Very uncertain in its appearance. This year (1877) I saw specimens at the end of May, but they all seemed much worn. The insect is very generally distributed over the county.

GENUS, *VANESSA*, *Fabricius*.

ATALANTA, *Linn.* Red Admiral Butterfly.

West. and Hump., t. 15, fgs. 1-4; *Morris*, Brit. Butt., pl. 27.

This beautiful insect is generally very abundant in gardens, about fallen fruit, from July to October.

IO, *Linn.* The Peacock Butterfly.

West. and Hump., t. 14, fgs. 2-4; *Morris*, Brit. Butt., pl. 28.

Very common, and generally distributed. It makes its appearance about the middle of July, and continues until the cold of autumn becomes too much for it.

ANTIOPA, Linn. The Camberwell Beauty Butterfly.

West. and Hump., t. 14, fgs. 5, 6; *Morris*, Brit. Butt., pl. 31.

Exceedingly rare. Messrs. Turton and Kingston say: "Once taken at East Oghwell." One specimen is recorded from each of the following places: Torquay, as reported in *Zoologist*, vol. xvii., p. 6461; Plymouth (see *Weekly Intelligencer*, p. 179); and Barnstaple, by Mr. G. F. Mathews. A specimen was captured at Plympton, by Dr. Gildard, about ten years ago; one taken at Brixham, 1873, by Mr. G. C. Bignell; one seen at Ivy-blossoms, at Ilfracombe, by Mrs. F. Smith, 1865. October, *Ent. Ann.*, 1866, p. 150.

POLYCHLOROS, Linn. The Large Tortoiseshell Butterfly.

West. and Hump., t. 13, fgs. 5-8; *Morris*, Brit. Butt., pl. 29.

Very generally distributed. At the same time not at all common anywhere. Hybernated specimens appear in April, if the weather is genial, and these continue till June. The brood comes out in August and September. The larvæ feed on elm and aspen.

URTICA, Linn. The Small Tortoiseshell Butterfly.

West. and Hump., t. 13, fgs. 9-13; *Morris*, Brit. Butt., pl. 30.

Common everywhere. The larvæ feed on nettles, and the perfect insect appears from April to October.

C. ALBUM.

West. and Hump., t. 13, fgs. 1-4; *Morris*, Brit. Butt., pl. 32.

Mr. G. F. Mathews records the capture of a specimen of this species on Ivy-blossoms, near Dartmouth, by Mr. J. W. Peers. Date of note, October 6th, 1868. *Ent. Mag.*, 1868, p. 147. This is the only record of the species in Devon.

Sub-family, ARGYNNIDI, *Stephens*.

GENUS, ARGYNNIS, *Fabrisius*.

PAPHIA, Linn. The Silver-washed Fritillary.

West. and Hump., t. 10, fgs. 1-5; *Morris*, Brit. Butt., pl. 53.

This beautiful insect is generally distributed in our wooded districts, and on furze-brakes near woods and copses, in July and August.

Var. A. VALEZINA.

West. and Hump., t. 12, f. 3.

This fine variety "was added to the list of Devonshire insects by Mr. Rogers, of Plymouth, who took it in Bickleigh Vale." (J. J. Reading's Catalogue, *Lepidoptera of Devon and Cornwall*, p. 12.)

ADIPPE, Linn. The High-brown Fritillary.*West. and Hump.*, t. 11, fgs. 1-3; *Morris*, Brit. Butt., pl. 49.

By no means a common insect. Frequents the borders of woods in similar localities to the one above, in July and August.

AGLAIA, Linn. The Dark-green Fritillary.*West. and Hump.*, t. 10, fgs. 6-10; *Morris*, Brit. Butt., pl. 50.

Taken in similar places to the two former species. It is not common, but widely distributed. July and August are the months it is on the wing.

APHRODITE, Fab. The Venus Fritillary.*West. and Hump.*, t. 12, fgs. 4, 5; *Morris*, Brit. Butt., pl. 52.

Mr. Dale, some little time previous to his death, very kindly gave me a list of the rarer insects taken by himself and friends in Devonshire, in which this grand insect occurs, but with a note of interrogation. It is said to have been captured in Bradley Wood, near Newton Abbot, by Dr. Jordan. The species is a native of North America.

LATHONIA, Linn. The Queen of Spain Fritillary.*West. and Hump.*, t. 11, fgs. 4-7; *Morris*, Brit. Butt., 51.

Very rare. Bovey Tracey (Rev. Z. J. Edwards), Barnstaple (Mr. G. F. Mathews).

SELENE, Fab. Small Pearl-bordered Fritillary.*West. and Hump.*, t. 9, fgs. 1-4; *Morris*, Brit. Butt., pl. 46.

Generally distributed. Found in furze-brakes, near woods, and on commons, from the end of May to July.

EUPHROSYNÉ, Linn. The Pearl-bordered Fritillary.*West. and Hump.*, t. 9, fgs. 8-10; *Morris*, Brit. Butt., pl. 45.

This is the most abundant of the whole group. On heaths and commons, borders of woods, &c., in May and June.

GENUS, MELITEA, Fabricius.**ATHALIA, Esper.** The Pearl-bordered-likeness Fritillary.*West. and Hump.*, t. 8, fgs. 9-12; *Morris*, Brit. Butt., pl. 47.

Mr. J. J. Reading says: "In 1855 I bred a hundred and twenty specimens of this insect from larvæ found feeding on *Plantago lanceolata* and *Tencrium scorodonia*. The first larvæ passed into the pupa condition on June 5th; the imago came forth on June 28th, making the pupa state to occupy three weeks." The insect is local,

but abundant where it does occur. I used to take it in Fordlands Woods, between Exeter and Dunsford, in June. Taken also at Barnstaple, Newton Bushel (Capt. Blomer), Buckland Woods (Dr. Jordan), near Widdecombe-in-the-Moor (Mr. R. Hall Jordan).

ARTEMIS, Fab. The Greasy Fritillary.

West. and Hump., t. 8, fgs. 5-8; *Morris*, Brit. Butt., pl. 43.

This, like the former, is very local, but tolerably abundant where it occurs. It is, so far as I can learn, more restricted in its range than the former. It is not found in the Plymouth district. It has been taken on Dartmoor; at Bideford, by Rev. G. J. Bostock; Torquay, by Dr. Battersby; Axminster, by Rev. Z. J. Edwards; in a boggy meadow at the higher part of Fordlands Wood by myself, in May and June; at Ivybridge, under the viaduct, by Mr. G. C. Bignell.

Family, ERYCINIDÆ, *Boisduval*.

GENUS, NEMEOBIUS, *Stephens*.

LUCINA, Linn. The Duke of Burgundy Fritillary.

West. and Hump., t. 24, fgs. 1-4; *Morris*, Brit. Butt., pl. 42.

A rare species in Devonshire. Here it would seem to have reached its limits in a westerly direction, as it is not found further west than Dartmouth, where it was taken by Mr. J. White, and I have taken it in Dunsford Wood—one specimen only. May and June are the months in which it should be sought for.

Family, LYCÆNIDÆ, *Leach*.

GENUS, THECLA, *Fabricius*.

BETULÆ, Linn. The Brown Hair-streak Butterfly.

West. and Hump., t. 25, fgs. 1-5; *Morris*, Brit. Butt., pl. 41.

This pretty insect occurs at Wistman's Wood (Dartmoor), Moretonhampstead, Plymbridge, Torquay, Dartmouth, Buckfastleigh, Sidmouth, Axminster, Bickleigh, on Ashburton Road to Princetown; larvæ in May, beaten out of blackthorn (Mr. G. C. Bignell); Starcross (Mr. Powley), Haldon (Dr. Jordan), Stoke Wood (Mr. J. Rowdon). In August.

QUERCUS, Linn. The Purple Hair-streak Butterfly.

West. and Hump., t. 24, fgs. 5-10; *Morris*, Brit. Butt., pl. 37.

Very generally distributed in our oak woods, in July and August. I have bred it from larvæ, obtained in Stoke Wood, near Exeter. It remained in the pupa state three weeks, and came out the first week in July.

RUBI, Linn. The Green Hair-streak Butterfly.*West. and Hump.*, t. 26, figs. 6-10; *Morris*, Brit. Butt., pl. 38.

This beautiful little butterfly is very generally distributed over the county, appearing about the end of May. I remember once on Haldon seeing some scores, to say the least, of this species flying round, and occasionally alighting on a bush. The bright green under-side, as they moved at various angles in the bright sunlight, made them shine like so many emeralds flashing in the sun. This bright green under-side reflecting the sunlight, and the dark superior surface absorbing the light, are, when seen under such conditions, very deceptive to the eye; for one moment you see the little gem, and in the next instant you lose sight of it. This sight impressed itself upon my memory twenty years ago, and it is one never to be forgotten.

GENUS, CHRYSOPHANUS, Hübner.**PHLÆAS, Linn.** The Common Copper Butterfly.*West. and Hump.*, t. 28, figs. 4-8; *Morris*, Brit. Butt., pl. 55.

A very-generally-distributed species, on open commons and furze-brakes. I am of Mr. Reading's opinion, that this insect is not so common as formerly.

GENUS, POLYOMMATUS, Latreille.**ARGIOLUS, Linn.** The Azure-blue Butterfly.*West. and Hump.*, t. 31, figs. 1-3; *Morris*, Brit. Butt., pl. 58.

A common and generally distributed species; to be seen in all our meadows, near woods, and in the woods flying round the holly bushes in May and June, and again in August, as the insect is double-brooded. Mr. G. F. Mathews says: "Almost all larvæ taken early in June produce butterflies in August; but I have had the spring larvæ produce perfect insects the following April."

ALSUS, Fab. The Bedford; or, Little Blue Butterfly.*West. and Hump.*, t. 31, figs. 4-8; *Morris*, Brit. Butt., pl. 58.

This must be regarded as a rather rare insect in Devonshire. It is almost confined to the Calcareous districts; in fact, is limited by the range of its food-plant. It has been taken very sparingly at Plymouth, Meavy Vale, Dartmouth, Torquay, Teignmouth, and Seaton; and again on the edge of the county at Pinhay Cliff, to the west of Lyme Regis.

ARION, Linn. The Large Blue Butterfly.

West. and Hump., t. 32, figs. 1-3; *Morris*, Brit. Butt., pl. 57.

There are only two localities in Devonshire, so far as known, for this fine species, and they are on the coast between the Bolt Head and Bolt Tail, on the Mica-schist formation, and near Ashburton. This insect should be sought for directly it comes out; for the males are so pugnacious, that they fight and destroy their beauty in a few hours. The middle of July is the time they are out. This species must be regarded as one of the rarities of the insect fauna of Devon.

ADONIS, Fab. The Clifden Blue Butterfly.

West. and Hump., t. 33, fig. 1-3; *Morris*, Brit. Butt., pl. 62.

This is another species, limited in its range to the limestone or Calcareous districts on account of its food plants; but it is not found further west, that I can ascertain, than Torquay, where it occurs at Chapel Hill, Anstey's Cove, and Hope's Nose. Taken also at Sidmouth and Seaton. It should be looked for towards the end of May, and again in August, as it is double-brooded.

ALEXIS, Hüb. The Common Blue Butterfly.

West. and Hump., t. 34, figs. 7-12; *Morris*, Brit. Butt., pl. 61.

This, the most abundant of all the Blues, is seen flitting about our meadows nearly through the summer, the spring brood somewhat overlapping the August brood. The species is liable to considerable variation as to its colouring, and some of the varieties are very curious.

ÆGON, Borkhausen. The Silver-studded Blue Butterfly.

West. and Hump., t. 34, figs. 1-6; *Morris*, Brit. Butt., pl. 60.

Taken at Torquay by Dr. Battersby, Teignmouth by Dr. Jordan, Bovey Tracey by the Rev. Z. J. Edwards, and Pinhay Cliffs, near Lyme Regis. Mr. Bignell says, *in lit.*, "Abundant at Bolt Head, on July 21st."

AGESTES, Wein Verz. The Brown Argus Butterfly.

West. and Hump., t. 36, figs. 5-7; *Morris*, Brit. Butt., pl. 64.

Generally distributed; but it cannot be called common. Occurs in May and June.

Var. SALMACIS, Stephens. The Durham Argus Butterfly.

West. and Hump., t. 37, figs. 1-3.

Taken by myself.

Var. **ARTAXERXES**, *Fab.* The Scotch Argus Butterfly.

West. and Hump., t. 37, fgs. 4-6.

Dr. Leach says: "I once observed it on Dartmoor, August 23rd, 1823."

Family, **HESPERIDÆ**, *Leach.*

GENUS, **THYMELE**, *Stephens.*

ALVEOLUS, *Hüb.* The Grizzled Skipper.

West. and Hump., t. 38, fgs. 1-6; *Morris*, Brit. Butt., pl. 66.

This is not an abundant species, but is widely dispersed over the county, from Whitsand Cliffs, near Plymouth, to Axminster, including Torquay and Exeter, at the end of May.

GENUS, **THANAOS**, *Boisduval.*

TAGES, *Linn.* The Dingy Skipper.

West. and Hump., t. 38, fgs. 9-13; *Morris*, Brit. Butt., pl. 66.

This species will rank about the same in number to the former, and is found in similar situations. It is double-brooded, appearing in May, and again in August. The best place I have found for both is the higher part of Fordlands Woods, and Stoke Woods, near Exeter.

GENUS, **STEROPES**, *Boisduval.*

PANISCUS, *Fab.* The Chequered Skipper.

West. and Hump., t. 39, fgs. 6-9; *Morris*, Brit. Butt., pl. 71.

Near Dartmouth, Abbotsham Road, near Bideford (Rev. G. Bostock). This must be regarded as a very rare insect in Devon. Neither my friend Mr. J. J. Reading nor myself have taken it.

GENUS, **PAMPHILA**, *Fabricius.*

SYLVANUS, *Fab.* The Large Skipper.

West. and Hump., t. 40, fgs. 4-6; *Morris*, Brit. Butt., pl. 67.

The most abundant of the whole group; appearing in May to July, in heathy places, and near woods, throughout the county.

COMMA, *Linn.* The Pearl Skipper.

West. and Hump., t. 41, fgs. 1-4; *Morris*, Brit. Butt., pl. 68.

An uncommon species in this county. Taken along the Embankment Road, Plymouth, by Mr. R. B. Reed; and by myself at Exmouth, on the cliffs beyond. Mr. G. F. Mathews has taken one near Dartmouth.

ACTÆON, *Esper.* The Lulworth Skipper.

West. and Hump., t. 41, fgs. 5-7; *Morris*, Brit. Butt., pl. 70.

Very local and rare. On grassy sloping cliffs beyond Exmouth, and to the east of Sidmouth (E. P.), Torquay

(Dr. Battersby). Should be sought for in July and August, in the brightest and hottest weather.

LINEA, *Fab.* The Small Skipper.

West. and Hump., t. 41, fgs. 8-12; *Morris*, Brit. Butt., pl. 69.

Generally distributed over the county, on heathy places, near woods, and at Cattedown Quarries. Common in July and August.

Section II., HETEROCERA, *Boisduval*.

Group I., SPHINGINA, *Stephens*.

Family, ZIGÆNIDÆ, *Leach*.

GENUS, PROCRIS, *Fabricius*.

STATICES, *Linn.* The Green Forester.

West. and Hump., vol. i., t. 6, f. 8; *Stainton*, Brit. Butt. and Moths, vol. i., p. 78.

This is not a common insect with us. The localities given are near Plymbridge, Berry Pomeroy, Axminster, Musbury, and Southdown; Exeter district, very rare. Appearing in June and July.

GENUS, ANTHOCERA, *Scopoli*.

TRIFOLII, *Esper*.

West. and Hump., vol. i., t. 8, f. 5 (marked on the plate, 17); *Stainton*, Brit. Butt. and Moths, p. 80.

This handsome insect is widely distributed over the county, but by no means common. Appears in June and July.

LONICERÆ, *Esper*.

West. and Hump., vol. i., t. 8, f. 16; *Stainton*, Brit. Butt. and Moths, p. 81.

This is not so frequent as the above. It has been taken at Cattedown (Plymouth), Torquay, Teignmouth, Southdown, and near Barnstaple.

FILIPENDULÆ, *Linn.* Six-spotted Burnet Moth.

West. and Hump., vol. v., t. 6, fgs. 11-14; *Stainton*, Brit. Butt. and Moths, p. 81.

Common, and generally distributed.

Family, SPHINGIDÆ, *Leach*.

GENUS, SMERINTHUS, *Latreille*.

OCELLATUS, *Linn.* Eyed Hawk Moth.

West. and Hump., vol. i., t. 1, f. 1; *Newman*, Brit. Moths, p. 4.

This beautiful insect is distributed over the county, but seems to gradually grow scarcer as we go westwards. It makes its appearance in June and July.

POPULI, *Linn.* The Poplar Hawk Moth.*West. and Hump.*, vol. i., t. 1, f. 4; *Newman*, Brit. Moths, p. 4.

Generally distributed, but not abundant, at least in the Exeter district. The perfect insect appears from May to July.

TILIAE, *Linn.* The Lime Hawk Moth.*West. and Hump.*, vol. i., t. 1, f. 7; *Newman*, Brit. Moths, p. 4.

Very generally distributed. This insect varies greatly in colour, and in the intensity of its markings. I have a variety of the male with the markings on one side barely indicated, whereas on the other wing they are of the normal intensity. Some have the markings of rich burnt sienna, and others of olive-green.

GENUS, *ACHERONTIA*, *Ochsenheimer*.ATROPOS, *Linn.* The Death's-head Hawk Moth.*West. and Hump.*, vol. i., t. 2; *Newman*, Brit. Moths, p. 5.

This grand insect is not uncommon in the Exeter district in the larva state, and it is generally distributed throughout the county, as we have it recorded from Plymouth to Axminster, and at Barnstaple in the north.

I had a larva brought me on August 10th, 1877, feeding on *Euonymus Europæus*.

GENUS, *SPHINX*, *Linnaeus*.CONVOLVULI, *Linn.* The Convolvulus Hawk Moth.*West. and Hump.*, vol. i., t. 3, fgs. 1-3; *Newman*, Brit. Moths, p. 6.

This fine insect is not rare. In some seasons my late friend Mr. D'Orville used to take them in some numbers over petunia and Marvel of Peru beds. We have notice of it from Tavistock, Barnstaple, Torquay, Plymouth, Teignmouth, &c. The larvæ feed on *Convolvulus arvensis*. The perfect insect is met with in August and September.

LIGUSTRI, *Linn.* The Privet Hawk Moth.*West. and Hump.*, vol. i., t. 3, f. 4; *Newman*, Brit. Moths, p. 7.

This is the commonest of all our Sphingidæ, and is very generally dispersed over the county.

GENUS, *DEILEPHILA*, *Ochsenheimer*.EUPHORBIÆ, *Linn.* The Spotted Hawk Moth.*West. and Hump.*, vol. i., t. 4, fgs. 1, 2; *Newman*, Brit. Moths, p. 7.

I fear this beautiful species is now lost to the Devonshire fauna, as none have been seen of late years. Most of

the old cabinets were supplied by Mr. Raddon, who discovered the larvæ in great numbers on Braunton Burrows, feeding on the sea spurge (*Euphorbia paralias*), in 1814. Previous to this Donovan (*British Insects*, vol. iii., p. 52) says that Mr. Curtis, the author of the *Flora Londinensis*, &c., "found four of the caterpillars last summer in Devonshire." This would be, perhaps, 1793, as the volume referred to above was published in 1794. Mr. G. F. Mathews says: "I believe this species to have become extinct on Braunton Burrows, owing to shifting sands."

GALII, Schiff. The Scarce Spotted Hawk Moth.

West. and Hump., t. 4, fgs. 4-6; *Newman*, Brit. Moths, p. 8.

In 1859 Mr. D'Orville took the larvæ of this species feeding on *Galium mollugo*. Several specimens of the moth have been taken in Exeter and the neighbourhood. Mr. Cummings took one in August, 1871, in Exeter. It has also been captured at Plymouth and at Ilfracombe, so that it would seem to be generally distributed; at the same time, it must be regarded as rare.

LIVORNICA, Esper. The Striped Hawk Moth.

West. and Hump., t. 4, fgs. 6-8; *Newman*, Brit. Moths, p. 9.

This very beautiful insect has become rather frequent of late. Three specimens were taken by Mr. Ramsey and a friend in 1866-7, near Plympton; and Mr. D'Orville captured one at rest in April, 1858, and another in 1860, at Alphington, near Exeter. The species has also been taken at Kingsbridge, Plymouth, Torquay, and Shaldon. I have no record of it from the north of the county. Mr. Buckton took specimens, on May 16th and September 9th and 10th, 1870, at Marychurch, Torquay, and Topsham (Mr. J. Rowdon). Two were captured at Dartmouth by Mr. G. F. Mathews.

CELERIO, Linn. The Silver-striped Hawk Moth.

West. and Hump., t. 5, fgs. 4-6; *Newman*, Brit. Moths, p. 9.

This is very rare with us. Mr. Cummings captured one in Exeter, September, 1871. Taken also by Dr. Lake, in his house at Teignmouth, on September 18th, 1867. A specimen was taken in the Royal Naval Hospital garden, Plymouth, by the late Mr. Bartlett.

GENUS, *CHEROCAMPA*, *Duponchel*.PORCELLUS, *Linn.* The Elephant Hawk Moth.*West. and Hump.*, t. 5, fgs. 9, 10; *Newman*, *Brit. Moths*, p. 10.

By no means common; at the same time, found scattered over the entire county, from Ilfracombe to Plymouth, Torquay, Alphington, and Sidmouth. Taken in June.

ELPENOR, *Linn.* The Elephant Hawk Moth.*West. and Hump.*, t. 5, fgs. 7, 8; *Newman*, *Brit. Moths*, p. 10.

This is one of the most beautiful of British insects, and is very generally distributed; but sparsely so over the whole country. The larvæ are partial to *Galium verum*, and I have found it on *G. uliginosum*.

NERII, *Linn.* The Oleander Hawk Moth.*West. and Hump.*, t. 5, fgs. 1-3; *Newman*, *Brit. Moths*, p. 10.

This fine insect cannot, I fear, claim a place as indigenous to Devonshire; although Captain Blomer met with the larvæ at Teignmouth in August, 1832, as recorded in *Loudon's Magazine of Natural History*, p. 260; and it is said that Mr. Raddon met with the insect near Barnstaple. The larvæ should be looked for where the periwinkle grows.

Family, *LESIIDÆ*, *Stephens*.
GENUS, *MACROGLOSSA*, *Scopoli*.

STELLATARUM, *Linn.* The Humming-bird Moth.*West. and Hump.*, t. 6, fgs. 1-3; *Newman*, *Brit. Moths*, p. 11.

Very generally distributed, and in some seasons plentiful, flying and sipping the nectar of the tubular flowers, such as verbenas, petunias, Marvel of Peru, &c.; appearing in April, but mostly at the end of August and September, and remaining till the cold of autumn becomes too much for it.

GENUS, *SESIA*, *Fabricius*.FUCIFORMIS, *Linn.* Broad-bordered Bee Hawk Moth.*West. and Hump.*, t. 6, f. 7; *Newman*, *Brit. Moths*, p. 11.

I used to take this pretty insect feeding on the yellow rattle, near the house at Fordlands, in June. Taken also at Torquay by Dr. Battersby, and at Bickleigh Vale by Mr. J. S. Dell.

BOMBYLIFORMIS, *Esper*. The Narrow-bordered Bee Hawk Moth.*West. and Hump.*, t. 6, fgs. 4-6; *Newman*, *Brit. Moths*, p. 12.

This has been taken near Barnstaple, by Mr. G. F. Mathews,

and at Bickleigh Vale, but is very rare. It should be sought for in May and June.

Family, *ÆGERIIDÆ*, *Stephens*.

GENUS, *SPHECIA*, *Hübner*.

APIIFORMIS, *Linn.* The Hornet Moth.

West. and Hump., t. 7, fgs. 2, 16; *Newman*, Brit. Moths, p. 16.

Very rare. Only one specimen has fallen to my lot in twenty-five years' collecting. Mr. Mathews has taken it near Barnstaple, and Mr. Dell at Bickleigh Vale. The larvæ of this species should be looked for in poplar trees, and more especially in the tall Lombardy species. The perfect insects appear in June and July.

BEMBECIFORMIS, *Hub.* The Lunar Hornet Moth.

West. and Hump., t. 7, fgs. 1, 15; *Newman*, Brit. Moths, p. 16.

Very rare. Taken at Teignmouth by Mr. Dale, and at Barnstaple by Mr. G. F. Mathews; also at Plympton; and at Alington by Mr. D'Orville.

GENUS, *TROCHILIUM*, *Scofield*.

ICHNEUMONIFORME, *Schiff.* The Six-belted Clearwing.

West. and Hump., t. 7, f. 7; *Newman*, Brit. Moths, p. 16.

A true lover of the sun; from June to August. This pretty little species may be met with on the wing on grassy slopes near the sea, all round Plymouth and the south coast, and on the north to Lynton.

PHILANTHIFORME, *Laspezres*. The Thrift Clearwing.

West. and Hump., t. 7, f. 8; *Newman*, Brit. Moths, p. 471. Suppt.

The honour of permanently adding this species to the list of British insects lies between Mr. George King, of Torquay, and my friend Mr. J. J. Reading, late of Plymouth. They both took the insect in 1860. Mr. King took it at Bolt Head, and Mr. Reading at Whitsand Bay, a sort of border-land between Devon and Cornwall; but the rugged, rocky character of the two localities is very much alike. Mr. Dale informed me that it was taken at Torquay.

CYNIIFORME, *Esper*. The Yellow-legged Clearwing.

West. and Hump., t. 7, f. 6; *Newman*, Brit. Moths, p. 16.

Rare. I took my specimens, in May, 1853, in Fordlands Wood; Mr. Rogers took it in Radford Wood, near Plymouth; and Mr. Dell at Devonport. It must, however, be regarded as a rare species. The larvæ feed on the bark of oak and elm.

TIPULIFORME, Linn. The Current Clearwing.*West. and Hump.*, t. 7, f. 9; *Newman*, Brit. Moths, p. 15.

This is the most common of the whole group. I bred the insect in some numbers from branches of red currants growing in the gardens at Coaver, near Exeter.

MYOPÆFORME, Bork. The Red-belted Clear Wing.*West. and Hump.*, t. 7, f. 11; *Newman*, Brit. Moths, p. 14.

Very rare in this county. Mr. Abraham captured it in the neighbourhood of Exeter, and I have one specimen taken here. Mr. G. F. Mathews has taken it at Barnstaple. The insect inhabits gardens. The larvæ are said to feed on the wood of the apple and the pear; and the perfect insects appear in May and June.

*Group II., BOMBYCINÆ, Latreille.**Family, HEPIALIDÆ, Stephens.**GENUS, HEPIALUS, Fabricius.***HUMULI, Linn.** The Ghost Moth.*West. and Hump.*, t. 8, fgs. 7-9; *Newman*, Brit. Moths, p. 20.

Common in some seasons in the meadows round Exeter, flying in the dusk of the evening. June and July.

VELLEDA, Hüb. The Map-winged Swift.*West. and Hump.*, t. 8, fgs. 10, 11; *Newman*, Brit. Moths, p. 20.

Very rare in this county. Only two localities are known for it; viz., Ivybridge (Miss Lothman) and Torquay (Mr. Buckton).

SYLVINUS, Linn. The Wood Swift.*West. and Hump.*, t. 8, f. 12; *Newman*, Brit. Moths, p. 19.

Scarce. Taken at Instow and Braunton by Mr. G. F. Mathews.

LUPULINUS, Linn. The Common Swift.*West. and Hump.*, t. 8, f. 3; *Newman*, Brit. Moths, p. 19.

Common everywhere some seasons, in May to July.

HECTUS, Linn. The Gold Swift.*West. and Hump.*, t. 8, fgs. 1, 2; *Newman*, Brit. Moths, p. 19.

Very sparsely distributed over the county—Plymouth, Torquay, Stoke Wood, Exeter, Barnstaple. At Cann Wood it is common, but very local. Captured also at Ivybridge.

Family, ZEUZERIDÆ, *Boisduval*.

GENUS, ZEUZERA, *Latreille*.

ÆSCULI, *Linn.* The Wood Leopard Moth.

West. and Hump., t. 9, fgs. 4-6; *Newman*, Brit. Moths, p. 18.

Rare. Barnstaple (Mr. G. F. Mathews), Fordlands Wood (Mr. D'Orville and myself), Saltram (Mr. Dell), Heavitree (Mr. Miles).

GENUS, COSSUS, *Fabricius*.

LIGNIPERDA, *Fab.* The Goat Moth.

West. and Hump., t. 9, fgs. 1-3; *Newman*, Brit. Moths, p. 18.

This beautiful moth is not rare; or rather, the larvæ are not rare. I have never, in all the years I have collected, taken the moth. It is an easy species to rear from the larvæ, but it requires patience; for the moth will sometimes remain three years in pupa before it emerges. It has been taken from Mount Edgcumbe to Axmouth in the south, and from Tavistock to Barnstaple in the north.

Family, NOTODONTIDÆ, *Stephens*.

GENUS, CERURA, *Schränk.*

VINULA, *Linn.* The Puss Moth.

West. and Hump., t. 15, fgs. 12, 13; *Newman*, Brit. Moths, p. 214.

The larvæ are generally distributed throughout the county, on willows, and white poplar; but the moth is rarely seen on the wing. The larvæ may be found from May to August.

BIFIDA, *Hub.* The Poplar Kitten Moth.

West. and Hump., t. 15, fgs. 8, 9; *Newman*, Brit. Moths, p. 202.

Rather a rare species. The larvæ mostly feeds on the black poplar. It has been taken, in July and August, at Plymouth, Barnstaple, Torquay, Dartmouth, and Stoke Wood, Exeter.

FURCULA, *Linn.* The Sallow Kitten.

West. and Hump., t. 15, fgs. 4, 5; *Newman*, Brit. Moths, p. 211.

This must be regarded as a rare species. It is found in the same localities as the former, with the addition of Ilfracombe.

GENUS, STAUBOPUS, *Germer*.

FAGI, *Linn.* The Lobster Moth.

West. and Hump., t. 13, fgs. 1, 2; *Newman*, Brit. Moths, p. 210.

Rather a rare species. It has been taken at Mount Edgcumbe, Saltram, Bideford, Barnstaple, Exeter, Topsham, Cann Wood, and Pennycomequick.

GENUS, **NOTODONTA**, *Oechsenheimer*.**DROMEDARIUS**, *Linn.* The Iron Prominent.*West. and Hump.*, t. 13, fgs. 11, 12; *Newman*, Brit. Moths, p. 229.

Generally distributed, but not common. Plymouth, Tavistock, Exeter, Barnstaple, Axminster. The larvæ were common, in August and September, in Bickleigh Wood, 1877.

TRILOPHUS, *Weiner*. The Three-humped Prominent.*West. and Hump.*, p. 66 (not figured); *Newman*, Brit. Moths, p. 230.

Near Exeter; very rare. Discovered in the larvæ state by the Rev. J. Hellings.

ZIC-ZAC, *Linn.* The Pebble Prominent.*West. and Hump.*, t. 13, fgs. 14, 15; *Newman*, Brit. Moths, p. 231.

Generally distributed, but not common. It has been taken at Plymouth, Torquay, Exeter, and Barnstaple, in May and June, and again in September.

GENUS, **LEOCAMPA**, *Stephens*.**DICTÆA**, *Linn.* The Swallow Prominent.*West. and Hump.*, t. 13, fgs. 16, 17; *Newman*, Brit. Moths, p. 228.

By no means common. Has been captured at Teignmouth, Torquay, Dartmouth, Plymouth, and Barnstaple, where it is said to be rather frequent in May and June, and has also been taken at Stoke Wood, near Exeter.

DICTÆOIDES, *Esper*. The Lesser Swallow Prominent.*West. and Hump.*, t. 13, fgs. 18, 19; *Newman*, Brit. Moths, p. 229.

A rare species; has been taken at Plymouth.

GENUS, **PTEROSTOMA**, *Germer*.**PALPINA**, *Linn.* The Pale Prominent.*West. and Hump.*, t. 14, f. 6; *Newman*, Brit. Moths, p. 224.

Generally, but sparsely, distributed over the county; appearing in May and September at Plymouth, Barnstaple, Torquay, Modbury, Exeter, and Dartmouth.

GENUS, **PTILOPHORA**, *Stephens*.**PLUMIGERA**, *Schiff*. The Plumed Prominent.*West. and Hump.*, t. 14, f. 18; *Newman*, Brit. Moths, p. 224.

Torquay; not rare in some seasons. May be met with on the gas-lamps in the public grounds.

GENUS, **DEYMONIA**, *Hübner*.**CHAONIA**, *Schiff*. The Lunar Marbled Brown.*West. and Hump.*, t. 14, fgs. 13, 14; *Newman*, Brit. Moths, p. 233.

A rare species with us, but has been taken at Plymouth.

This insect is greatly attracted to the gas-lights. Should be looked for in May. Mr. Buckton has taken it at gas-lamps at Torquay; and it has been taken at Dartmouth and Torquay by Mr. G. F. Mathews, and near Exeter by Mr. D'Orville.

DODONÆA, Schiff. The Marbled Brown.

West. and Hump., t. 14, f. 11; *Newman*, Brit. Moths, p. 233.

Also a rare species; appearing in May at Plymouth and near Exeter.

GENUS, **LOPHOPTERYX**, *Stephens*.

CAMELINA, Linn. The Coxcomb Prominent.

West. and Hump., t. 14, fgs. 1, 2; *Newman*, Brit. Moths, p. 225.

By no means common; but has been captured at Plymouth, Ivybridge, Totnes, Stoke Wood (Exeter), Torquay, in May and June.

CUCULINA, Schiff. The Maple Prominent.

West. and Hump., t. 14, fgs. 3, 4; *Newman*, Brit. Moths, p. 226.

Once taken in the Exeter district in the pupa state by the Rev. J. Hellings.

GENUS, **PERIDEA**, *Stephens*.

TREPIDA, Fab. The Great Prominent.

West. and Hump., t. 14, fgs. 9, 10; *Newman*, Brit. Moths, p. 232.

Pupæ have been taken in Killerton Park, the seat of Sir T. Acland, and various places in the Exeter district where large oaks are growing; and the moth has been taken at Barnstaple, Plymouth, Dartmouth, &c.

GENUS, **PYGÆRA**, *Stephens*.

BUCEPHALA, Linn. The Buff-tip Moth.

West. and Hump., t. 13, fgs. 3, 4; *Newman*, Brit. Moths, p. 219.

The larvæ of this moth are very common in some seasons, almost defoliating small elms. They are not particular in their food, as they will feed on the oak and the rose with avidity; but I think they prefer the elm.

GENUS, **PETASIA**, *Stephens*.

CASSINEA, Fab. The Sprawler.

West. and Hump., t. 14, fgs. 7, 8; *Newman*, Brit. Moths, p. 217.

This very sluggish moth may be found sticking on old posts and rails. It is somewhat difficult to discover, as its colour so resembles the greyish lichens growing on the wood. It is widely and sparsely distributed throughout the county in November and December.

GENUS, *DILOBA*, *Boisduval*.*CÆRULEOCEPHALA*, *Linn.* The Figure-of-Eight Moth.*West. and Hump.*, t. 16, figs. 4 and 4; *Newman*, *Brit. Moths*, p. 234.

This curiously-marked moth is rather rare with us. Mr. D'Orville met with the larvæ in some plenty twice. The first time they were feeding on the apple, and in 1859 he found them on the common laurel. The moth is generally distributed, appearing in August.

Family, *LIPARIDÆ*, *Stephens*.GENUS, *PSILURA*, *Stephens*.*MONACHA*, *Linn.* The Black Arches Moth.*West. and Hump.*, t. 17, figs. 4-7; *Newman*, *Brit. Moths*, p. 38. Male and female.

This is not common, but sparsely distributed over the entire county, appearing in July and August in woods. The larvæ were common at Ivybridge, Barnstaple, and Dartmouth in 1871.

GENUS, *DASYCHIRA*, *Stephens*.*PUDIBUNDA*, *Linn.* The Pale Tussock Moth.*West. and Hump.*, t. 17, figs. 17-19; *Newman*, *Brit. Moths*, p. 38.

Generally distributed, and frequent in woods and copses in May and June.

GENUS, *DEMAS*, *Stephens*.*CORYLI*, *Linn.* The Nut-tree Tussock Moth.*West. and Hump.*, t. 17, figs. 20, 21; *Newman*, *Brit. Moths*, p. 40.

Very rare in the Exeter district. It has been taken at Plymbridge, Kingsbridge, Torquay, and Topsham. The larvæ were common in June and September in Bickleigh Wood and Dartmouth.

GENUS, *ORGYIA*, *Ochsenheimer*.*ANTIQUA*, *Linn.* The Vapourer Moth.*West. and Hump.*, t. 17, figs. 8-10; *Newman*, *Brit. Moths*, p. 40.

This has become common of late years. The larvæ feed on various trees and shrubs, and, notwithstanding its beauty and curious form, it must be voted injurious. Three years ago the rose trees in a garden near Exeter were completely defoliated by them. This year (1877) the foliage of a large laburnum tree was literally eaten to rags. The larvæ are pretty nearly omnivorous, for scarcely a tree or shrub comes amiss to them. Some of the caterpillars from the laburnum I collected in the beginning of August, and the moth came out on the 20th of the same month.

GONOSTIGMA, *Linn.* The Scarce Vapourer Moth.

West. and Hump., t. 17, fgs. 11-13; *Newman*, Brit. Moths, p. 39.

This is a rare species. I took the larvæ some years ago in Stoke Wood, near Exeter.

GENUS, **STILPNOTIA**, *Westwood*.

SALICIS, *Linn.* The Satin Moth.

West. and Hump., t. 18, fgs. 2-4; *Newman*, Brit. Moths, p. 36.

A rare species with us; and, so far as I am aware, has only been taken in South Devon. The localities recorded for it are Totnes, Torquay, and Exeter.

GENUS, **POETHESIA**, *Stephens*.

AURIFLUA, *Fab.* The Yellow-tail Moth.

West. and Hump., t. 18, fgs. 7, 8; *Newman*, Brit. Moths, p. 36.

An abundant species in almost all the Southern counties, but is not found further West than Torquay, where it was captured by Dr. Battersby. Mr. Rowdon informs me he has taken it in the Exeter district in August.

CHRYSORRHÆA, *Linn.* The Brown-tail Moth.

West. and Hump., t. 18, fgs. 9-11; *Newman*, Brit. Moths, p. 36.

This is also extremely rare in Devon. The only known localities are Torquay and Topsham; and at Torquay, like the one above, it has only been taken by one collector, in August.

Family, **LITHOSIDÆ**, *Stephens*.

GENUS, **MILTOCHRISTA**, *Hübner*.

MINIATA, *Forst.* The Rosy Footman; or, Red Arches.

West. and Hump., t. 19, f. 22; *Newman*, Brit. Moths, p. 27.

Not abundant, but generally distributed in long-grassy places near woods. May and June.

GENUS, **LITHOSIA**, *Fabricius*.

CANIOLA, *Hüb.* The Hoary Footman.

Bombyx caniola, *Hübner*, p. 220; *Doubleday* in *Zoologist*, p. 8391; *Newman*, Brit. Moths, p. 473. Supplement.

Very rare; taken, in June, at Torquay, by Mr. King, 1861. Mr. Bignell informs me that it has been taken at Bolt Head in July, and the larvæ have been found feeding on lichens on the rocks. Mr. G. F. Mathews has captured it at Dartmouth. Mr. Newman says that the time for its appearance is August.

COMPLANA, Linn. The Scarce Footman Moth.*West. and Hump.*, t. 20, f. 14; *Newman*, Brit. Moths, p. 28.

A scarce species. It has been taken at Barnstaple by Mr. G. F. Mathews, and at Fordlands by myself. The larvæ, Mr. Reading informs me, he found feeding on lichens growing on cliffs and slopes that are inclined to the sea. Mr. Rowdon has taken it at Stoke Wood.

LURIDEOLA, Treit. The Common Footman Moth.*West. and Hump.*, t. 20, f. 14; *Newman*, Brit. Moths, p. 28.

Generally distributed over the county, though not common anywhere. Appearing in July.

GRISCOLA, Hüb. The Dingy Footman Moth.*West. and Hump.*, t. 20, f. 10; *Newman*, Brit. Moths, p. 29.

A rare species, but has been taken at Mount Edgcumbe, Bickleigh Down, Barnstaple, and Exeter.

GENUS, GENISTIS, Hübner.**QUADRA, Linn.** The Four-spotted Footman Moth.*West. and Hump.*, t. 20, fgs. 17-19; *Newman*, Brit. Moths, p. 29.

This must be regarded as a scarce species. It has been taken in the woods at Shaugh Bridge and at Torquay; and I have taken the larvæ on lichens on trees in Stoke Wood, near Exeter. Dartmouth (Mr. G. F. Mathews). The moth has been taken at Exeter.

GENUS, GNOPHRIA, Stephens.**RUBRICOLLIS, Linn.** The Red-necked Footman Moth.*West. and Hump.*, t. 20, fgs. 20, 21; *Newman*, Brit. Moths, p. 29.

Frequent round Plymouth, Ivybridge, Kingsbridge, Torquay, Axminster, Barnstaple, but by no means common in the Exeter district.

GENUS, CYBOSIA, Hübner.**MESOMELLA, Linn.** The Four-dotted Footman Moth.*West. and Hump.*, t. 20, f. 25; *Newman*, Brit. Moths, p. 27.

Very rare. Only three localities are given for it; viz., Torquay, taken by Dr. Battersby; Fordlands and Stoke Wood, near Exeter, by myself; and Cann Wood, by Mr. Bignell, in July.

GENUS, PHILEA, Datman.**IRRORELLA, Linn.** The Dew Moth.*West. and Hump.*, t. 20, fgs. 22, 23; *Newman*, Brit. Moths, p. 27.

Very rare in Devon—Mount Edgcumbe, Babbington, and Seaton; taken by Mr. J. S. Dell.

GENUS, **NUDARIA**, *Haworth.***MUNDANA**, *Linn.* The Muslin Moth.*West. and Hump.*, t. 16, fgs. 19, 20; *Newman*, Brit. Moths, p. 27.

Very generally distributed over the county, but not common anywhere. Thick, damp hedges are its places of resort in July. I took my specimens in a wood at Exminster, adjoining the Exminster marshes, 20th July.

SENEX, *Hüb.* The Round-winged Muslin Moth.*West. and Hump.*, t. 16, f. 20; *Newman*, Brit. Moths, p. 27.

Very rare. One specimen only taken by myself in the Exminster marshes in July; and one by Mr. Dale.

Family, **CHELONIDÆ**, *Stephens.*GENUS, **HYPERCOMPA**, *Stephens.***DOMINULA**, *Linn.* The Scarlet Tiger Moth.*West. and Hump.*, t. 19, fgs. 16, 17; *Newman*, Brit. Moths, p. 31.

This brilliantly coloured moth is sparsely distributed in the south of the county, being found at Bickleigh Vale, Yealmpton, Ivybridge, Kingsbridge, and Dartmouth, abundant; Torquay, Exeter, Chagford, and Axminster. June and July.

GENUS, **ARCTIA**, *Schrank.***VILLICA**, *Linn.* The Cream-spot Tiger Moth.*West. and Hump.*, t. 19, fgs. 9, 10; *Newman*, Brit. Moths, p. 34.

Frequent in May and June amongst ferns (the common bracken), near woods, and rough places.

CAJA, *Linn.* The Tiger Moth.*West. and Hump.*, t. 19, fgs. 6-8; *Newman*, Brit. Moths, p. 33.

Generally distributed over the county. This insect is liable to considerable variation in its markings and colouring, all however being very beautiful. Found in June and July.

GENUS, **EUTHEMONIA**, *Stephens.***RUSSULA**, *Linn.* The Clouded Buff Moth.*West. and Hump.*, t. 19, fgs. 11-13; *Newman*, Brit. Moths, p. 32.

Rather a rare species. Taken at Lower Bickleigh Down. I have taken it amongst bracken in Fordlands, and Mr. Rowden on Haldon.

GENUS, **SPILOSOMA**, *Stephens.***MENTHRASTI**, *Schiff.* The White Ermine Moth.*West. and Hump.*, t. 18, fgs. 12-14; *Newman*, Brit. Moths, p. 35.

Generally distributed over the entire county, but not common. Taken May and June. I have bred this species from larvæ feeding on *Atriplex patula*, in September.

LUBRICEPEDA, *Linn.* The Buff Ermine Moth.

West. and Hump., t. 18, fgs. 17-19; *Newman*, Brit. Moths, p. 35.

Common in June and July, everywhere amongst rough herbage.

GENUS, **DIAPHORA**, *Stephens.*

MENDICA, *Linn.* The Muslin Moth.

West. and Hump., t. 18, fgs. 20-22; *Newman*, Brit. Moths, pp. 34, 35.

Sparsely distributed over the county. Messrs. Westwood and Humphreys say that the "caterpillar feeds upon aquatic plants in the autumn." Mr. H. D'Orville bred this insect in great numbers, and he found that they fed best upon the leaves of plantain, chickweed, and the common lamium, or red nettle.

GENUS, **PHRAGMATOBIA**, *Stephens.*

FULIGINOSA, *Linn.* The Ruby Tiger Moth.

West. and Hump., t. 19, fgs. 1, 2; *Newman*, Brit. Moths, p. 34.

Not common, but generally distributed. Found near woods, amongst thick herbage, in May, July, and August. The larvæ feed on fern (bracken) and plantain.

GENUS, **CALLIMORPHA**, *Latreille.*

JACOBÆA, *Linn.* The Cinnabar Moth.

West. and Hump., t. 19, fgs. 20, 21; *Newman*, Brit. Moths, p. 31.

Common everywhere, in July and August. The larvæ feed on the common groundsel.

Var. B., FLAVO-MACULATA, *Mihi.*

The specimen on which this name is founded is larger than the generality of specimens in the expanse of wings; the anterior wings are of the normal colouring, but the crimson posterior are largely blotched with yellow.

In the variety mentioned by Mr. Stephens, he says: "The sanguineous colour converted into pale luteous." The difference then in Mr. Stephens's variety and mine is, that in mine the sanguineous posterior wings are blotched with yellow. I met with this specimen on the Topsham Road, near Exeter. Unfortunately it is injured. A horse had preceded me, and set his foot on it, which has damaged the extremities of the anterior wings.

GENUS, **DEIOPEIA**, *Stephens.*

PULCHELLA, *Linn.* The Crimson-speckled Moth.

West and Hump., t. 20, f. 1; *Newman*, Brit. Moths, p. 31.

This lovely moth is the gem of the whole group. Mr. Cooke, of New Oxford Street, London, and myself were

out hunting for insects on the Crediton railway banks, about twenty years ago, when I saw a specimen of this beautiful insect sitting on a stone. I called Mr. Cooke to look at it, and then struck with my net, but missed it, and the wind carried it over the hedge, and we lost it. I need not say that we searched diligently for a long time, but without success. Since the above was written Mr. Bignell tells me that specimens have been taken at Kingsand, Stonehouse, and Slapton Sands, the latter by Mr. G. F. Mathews, who took seven specimens in September, 1876. Several have been taken lately at Paignton.

Family, BOMBYCIDÆ, *Stephens*.
GENUS, *LASIOCAMPA*, *Schrank*.

RUBI, *Linn*. The Fox Moth.

West. and Hump., t. 11, fgs. 1, 2; *Newman*, Brit. Moths, p. 43.

Generally distributed over the county, though by no means common. The larvæ may be observed feeding on bramble leaves in the autumn, and the moth, which is rather difficult to rear, comes out in May and June. Mr. D'Orville remarks of this species that the larvæ are frequently found in stubble fields after the corn is cut feeding on clover.

TRIFOLII, *Schif*. The Grass Egger Moth.

West. and Hump., t. 11, fgs. 5, 6; *Newman*, Brit. Moths, p. 44.

Local and rare. The only localities, so far as I am aware, given for it in the county are Torquay (on the authority of Dr. Battersby), Bovey Heathfield (myself), Bolt Head and Bolt Tail (Mr. Bignell), Alphington (Mr. Rowdon). Carrington includes this species in his list of insects taken on Dartmoor and the neighbourhood. It should be looked for in August.

QUERCUS, *Linn*. The Oak Egger Moth.

West. and Hump., t. 11, f. 13; *Newman*, Brit. Moths, p. 43.

Common, and generally distributed throughout the county. The perfect insect appears in July and August.

GENUS, *ERIOGASTER*, *Germar*.

LANESTRIS, *Linn*. The Small Egger Moth.

West. and Hump., t. 10, fgs. 3, 4; *Newman*, Brit. Moths, p. 42.

Widely distributed, but cannot be called common. Plentiful where they appear, but must be regarded as a rare species in this district. The insect appears as early as the end of February and March.

GENUS, **CLISIOCAMPA**, *Curtis*.NEUSTRIA, *Linn.* The Lackey Moth.*West. and Hump.*, t. 10, fgs. 11, 12; *Newman*, *Brit. Moths*, p. 42.

Common everywhere in gardens and orchards, the female laying numerous eggs in a broad ring agglutinated together round the young branches of the trees. The perfect insect appears in July and August.

GENUS, **TRICHIURA**, *Stephens*.CRATÆGI, *Linn.* The Pale Oak Egger Moth.*West. and Hump.*, t. 10, fgs. 13, 14; *Newman*, *Brit. Moths*, p. 41.

This must be regarded as a rare species with us. Only three or four localities, so far as I am aware, are given for it; viz., Plymouth, Dartmoor (Carrington), Torquay, Lustleigh, and Exeter. It should be looked for in September.

GENUS, **PÆCILOCAMPA**, *Stephens*.POPULI, *Linn.* The December Moth.*West. and Hump.*, t. 10, fgs. 7, 8; *Newman*, *Brit. Moths*, p. 41.

This appears to be a sparsely, though generally distributed species, and is frequently taken by collectors at gas-lamps around the large towns in December.

GENUS, **ODONESTIS**, *Germar*.POTATORIA, *Linn.* The Drinker Moth.*West. and Hump.*, t. 10, fgs. 15-17; *Newman*, *Brit. Moths*, p. 45.

Common everywhere, in July and August.

GENUS, **GASTROPACHA**, *Ochsenheimer*.QUERCIFOLIA, *Linn.* The Oak Lappet Moth.*West. and Hump.*, t. 12, fgs. 4-7; *Newman*, *Brit. Moths*, p. 45.

This fine insect would seem not to be rare in Devon, although we have but few localities given for it—Torquay and near Plymouth, Alphington and Exeter. In these places it is not at all uncommon in some seasons; for as many as thirty or forty specimens have been taken in a season. I have bred the insect from larvæ, feeding on apple leaves.

ILICIFOLIA, *Linn.* The Small Lappet.*West. and Hump.*, t. 12, f. 8; *Newman*, *Brit. Moths*, p. 46.

Captured by Mr. Horton, near Lynton. (See *Entomologist* for November, 1864.)

Family, ENDROMIDÆ, Stephens.
GENUS, **ENDROMIS**, Ochsenheimer.

VERSICOLOR, Linn. The Kentish Glory Moth.

West. and Hump., t. 16, fgs. 1-3; *Newman*, Brit. Moths, pp. 46-49.

This extremely rare insect in the Western Counties has, so far as our information goes, been only taken twice, one, by Dr. Battersby, at Torquay, and another at Barnstaple; this latter, however, requires verification. Mr. G. F. Mathews writes me: "I believe I have *seen* the males of this species flying wildly in Lustleigh Cleave. A quantity of birch grows in the woods."

Family, SATURNIDÆ, Stainton.
GENUS, **SATURNIA**, Schrank.

PAVONIA-MINOR, Linn. The Emperor Moth.

West. and Hump., t. 10, fgs. 1, 2; *Newman*, Brit. Moths, p. 48.

Not uncommon on heaths and downs, such as Woodbury Common, Haldon, Dartmoor, Bickleigh, Torquay, and Barnstaple. The larvæ feed on the common ling, *Calluna vulgaris*, and the moth appears in May. I met with the larva, on the lower part of Yes Tor, on September 10th; it underwent its final moult the next day.

Family { DREPANULIDÆ, Guende.
 { PLATYPERIGIDÆ, Stephens.
GENUS, **CILIX**, Leach.

SPINULA, Schiff. The Chinese Character.

West. and Hump., t. 74, f. 8; *Newman*, Brit. Moths, p. 209.

This curious and anomalous little moth is widely distributed, in hedgerows and borders of woods, throughout the county, but not common; appearing in August.

GENUS, **PLATYPTERYX**, Laspeyres.

LACERTINARIA, Linn. The Scalloped Hook-tip.

West. and Hump., t. 74, fgs. 1, 2; *Newman*, Brit. Moths, p. 206.

A rare and widely-dispersed species; found at Bickleigh Vale, Torquay, Exeter, and Axminster, in July.

GENUS, **DREPANA**, Schrank.

FALCATARIA, Linn. The Pebble Hook-tip.

West. and Hump., t. 74, fgs. 4, 5; *Newman*, Brit. Moths, p. 207.

A local and rare species; found in similar places to the former, and in the same month, July.

HAMULA, Schiff. The Oak Hook-tip.

West. and Hump., t. 74, f. 6; *Newman*, Brit. Moths, p. 208.

A rare and local species; only three or four localities are

given for it, Axminster and Torquay, Fordlands, near Exeter, and Stoke Wood, Exeter.

UNGUICULA, *Hüb.* The Barred Hook-tip.

West. and Hump., t. 74, f. 7; *Newman*, Brit. Moths, p. 208.

Only three localities are recorded for this pretty species; namely, Greenbank, Plymouth, and Bickleigh Vale (on the authority of Mr. J. S. Dell), and Dartmouth (Mr. G. F. Mathews).

Family, PSYCHIDÆ, *Boisduval*.

GENUS, *FUMEA*, *Haworth*.

ROBORICOLELLA, *Boisd.*

West and Hump., t. 16, f. 10.

The larvæ of this little inconspicuous species live in small cases made up of bits of dried grass stems, placed mostly longitudinally, similar to the caddis-worm cases. They are frequently found attached to the under side of bramble leaves, in thickets, the moth appearing in July. It is found not uncommonly at Plymouth, on Staddon Heights, and I have met with it frequently in the Exeter district.

Section, HETEROCERA, *Boisduval*.

Family, NOCTUO-BOMBYCIDÆ, *Latrielle*.

GENUS, *THYATIRA*, *Ochsenheimer*.

DERASA, *Linn.* The Buff Arches Moth.

West. and Hump., t. 41, f. 15; t. 42, f. 106; *Newman*, Brit. Moths, p. 237.

Generally distributed throughout the wooded districts of the county, but especially in the north, in July.

BATIS, *Linn.* The Peach-blossom Moth.

West. and Hump., t. 41, f. 13; t. 42, f. 114; *Newman*, Brit. Moths, p. 238.

Also generally distributed in rather damp woods throughout the county; not so plentiful in the Plymouth district as it is in the north of the county. In the Exeter district we take it in Stoke Wood and the woods belonging to Mrs. Merivale's estate. When recent, this is one of the most beautiful of our British insects. To be looked for in July.

GENUS, *CYMATOPHORA*, *Treitschke*.

DUPLARIS, *Linn.* The Lesser Satin Moth.

West. and Hump., t. 43, f. 2; *Newman*, Brit. Moths, p. 239.

Rather a rare species; at the same time it has been taken all over the county, at "sugar," in July.

DILUTA, Schiff. The Lesser Lute-string Moth.

West. and Hump., t. 43, fgs. 3, 4; *Newman*, Brit. Moths, p. 240.

This is not a common species in the south of the county, but is not uncommon in the north in woods, appearing in August.

FLAVICORNIS, Linn. The Yellow-horned Moth.

West. and Hump., t. 43, fgs. 7, 8; *Newman*, Brit. Moths, p. 242

A rare species in Devon; the only localities so far recorded for it are Wembury, near Plymouth, and Fordlands, near Exeter.

RIDENS, Fab. The Frosted Green Moth.

West. and Hump., t. 43, fgs. 9, 10; *Newman*, Brit. Moths, p. 243.

A very scarce species with us, but has been taken at Riverside, Plymbridge, Great Torrington, and Stoke Wood, near Exeter. Only one, and the first I believe taken in the county, I took in Exwick Wood, in April, 1856. The larvæ of this is said to have been common in May and June in Camborne, in 1871.

Family, *BRYOPHILIDÆ*, *Guenée*.
GENUS, *BRYOPHILA*, *Ochsenheimer*.

PERLA, Schiff. The Marbled Beauty.

West. and Hump., t. 41, f. 10; *Newman*, Brit. Moths, p. 246.

Very generally distributed. Rather common in the neighbourhood of Exeter on old walls, amongst mosses and lichens, in July and August.

GLANDIFERA, Schiff. The Marbled Green.

West. and Hump., t. 41, f. 8; *Newman*, Brit. Moths, p. 244.

Generally distributed; very common at Plymouth, Barnstaple, Exeter, Torquay, and Teignmouth, on old walls and rocks where mosses and lichens abound, in July and August.

Family, *BOMBYCOIDÆ*, *Guenée*.
GENUS, *DIPHThERA*, *Ochsenheimer*.

ORION, Esper. The Scarce Marveil-du-Jour.

West. and Hump., t. 41, f. 11; t. 42, f. 112; *Newman*, Brit. Moths, p. 247.

Exceedingly rare in Devonshire. Three localities only are recorded for it; namely, Wembury, Great Torrington (on the authority of Mr. G. F. Mathews), and Lee Moor Tramway, near Shaugh (Mr. H. S. Bishop).

GENUS, *ACRONYCTA*, *Ochsenheimer*.TRIDENS, *Schiff*. The Dark Dagger.*West. and Hump.*, t. 42, f. 7; t. 41, f. 18; *Newman*, Brit. Moths, p. 248.

A rather rare species, but widely distributed; mostly found in gardens, about the middle of June. Mr. Dell has bred this insect from larvæ found feeding on blackthorn.

PSI, *Linn*. The Grey Dagger.*West. and Hump.*, t. 41, f. 116; t. 42, f. 5; *Newman*, Brit. Moths, p. 250.

Common everywhere, in gardens, throughout the county. The larvæ of this are very beautiful, and feed on a variety of plants, such as leaves of peaches, privet, &c., the moth appearing in July.

LEPORINA, *Linn*. The Miller Moth.*West. and Hump.*, t. 41, f. 1; t. 42, fgs. 12, 13; *Newman*, Brit. Moths, p. 151.

Not uncommon around Plymouth, at Greenbank, North Hill, Milehouse, Devonport, Torquay, and Teignmouth. Very rare in the Exeter district; has been taken on Haldon. The moth appears in June and July.

ACERIS, *Linn*. The Sycamore Moth.*West. and Hump.*, t. 41, f. 5; t. 42, f. 17; *Newman*, Brit. Moths, p. 251.

Very rare; found in Saltram Woods, Mount Edgcumbe, and Torquay, in May and June.

MEGACEPHALA, *Schiff*. The Poplar Grey.*West. and Hump.*, t. 41, 116, 42, f. 16; *Newman*, Brit. Moths, p. 252.

Not uncommon about Plymouth (especially in the larva state), Torquay, and Barnstaple. Rare in this district.

ALNI, *Linn*. The Alder Moth.*West. and Hump.*, t. 41, f. 114; t. 42, f. 3; *Newman*, Brit. Moths, p. 252.

Very rare; taken at Plymouth, Barnstaple, and Tavistock, larvæ only, September 8th, 1862 (Mr. R. M'Lachlan). The perfect insect appears in June.

LIGUSTRI, *Schiff*. The Coronet.*West. and Hump.*, t. 41, f. 112; t. 42, f. 1; *Newman*, Brit. Moths, p. 255.

Widely distributed, but not common. It is said however to be very frequent at Barnstaple. Mr. Bignell says: "Larvæ common on young ash trees, in Cann Wood and Plymbridge, 1873-4." In the Exeter district it must be regarded as rare; the moth appearing in June and July.

RUMICIS, Linn. The Knot-grass Moth.

West. and Hump., t. 41, f. 121; t. 42, f. 15; *Newman*, Brit. Moths, p. 255.

Common everywhere in May and June.

Family, **LEUCANIIDÆ**, *Gueneé*.

GENUS, **LUCANIA**, *Ochsenheimer*.

CONIGERA, Schiff. The Brown-line Bright Eye.

West. and Hump., t. 29, fgs. 3, 4; *Newman*, Brit. Moths, p. 259.

A generally distributed species, both north and south of the county; appearing in July.

TURCA, Linn. The Double-line Moth.

West. and Hump., t. 29, fgs. 1, 2; *Newman*, Brit. Moths, p. 260.

This is a local and rather scarce species, having been taken at Kingsbridge, Werrington Park, Torquay, and Alphington, at "sugar," in June.

LITHARGYRIA, Espr. The Clay Moth.

West. and Hump., t. 29, f. 6; *Newman*, Brit. Moths, p. 261.

Common everywhere in July.

PUTRESCENS, Hüb. The Devonshire Wainscot.

Entom. Ann., 1850, p. 130; 1852, pl. 1, f. 2; *Newman*, Brit. Moths, p. 265.

Very local, but numerous where it occurs. This insect was added to the British fauna by Dr. Battersby and Mr. Stewart, of Torquay, in 1859, and was recorded in the *Entomologists' Intelligencer* of that year, p. 174. Beside the Torquay locality, the Rev. C. Grinstead captured this species at Teignmouth. So far the insect appears to be strictly confined to the sea-board. Mr. W. Buckler has described the caterpillar in the *Entomologists' Monthly Magazine*, vol. ii. The perfect insect appears from the 2nd to the 20th July. Mr. G. F. Matthews says, *in litt.*, that "this is the only British *Leucania* whose larvæ become full-fed in the autumn."

LITTORALIS, Curtis. The Shore Wainscot.

Curtis, Brit. Entom., v. 4, pl. 167; *Newman*, Brit. Moths, p. 263; *West. and Hump.*, t. 47, f. 6.

This is entirely a coast species, the larvæ of which are found feeding on the roots of *Triticum junceum* and *Elymus arenarius* all round our coast, both north and south; the perfect insect appearing in July.

PUDORINA, Weim. The Striped Wainscot.

West. and Hump., t. 47, fgs. 13, 14; *Newman*, Brit. Moths, p. 264.

Recorded as a Devon insect in Mr. Jenner Fust's List

(*Entomological Society's Transactions*, vol. iv., 3rd Series).
The moth appears in July.

COMMA, *Linn.* The Shoulder-stripe Wainscot.

West. and Hump., t. 47, f. 2; *Newman*, Brit. Moths, p. 264.

This species has been taken abundantly at Barnstaple by Mr. G. F. Mathews. Captured also in Bickleigh Vale and at Torquay.

STRAMINEA, *Treits.* The Southern Wainscot.

West. and Hump., t. 47, f. 1; *Newman*, Brit. Moths, p. 266.

Recorded as Devonian by Mr. J. Fust; appearing in June and July.

IMPURA, *Hüb.* The Smoky Wainscot.

West. and Hump., t. 47, fgs. 3, 4; *Newman*, Brit. Moths, p. 266.

A generally-distributed species, all over the county, in July.

PALLENS, *Linn.* The Common Wainscot.

West. and Hump., t. 47, fgs. 7, 8; *Newman*, Brit. Moths, p. 267.

Very abundant, and generally distributed throughout the county in September.

VITELLINA, *Hüb.* The Delicate.

Intelligencer, vol. v., p. 2; *Newman*, Brit. Moths, p. 269.

Captured at Torquay in considerable numbers in some years.

GENUS, **NONAGRIA**, *Ochsenheimer*.

DESPECTA, *Trei.* The Small Rufous.

Stainton, Manual, vol. i., p. 192; *Newman*, Brit. Moths, p. 269.

Given by Mr. J. Fust as occurring in Devon.

FULVA, *Hüb.* The Small Wainscot.

West. and Hump., t. 47, f. 9, *Leucania fulva*; *Newman*, Brit. Moths, p. 274.

Very scarce in Devon. Three localities are given for it; namely, Teignmouth (Dr. Jordan), Exeter district (E. P.), and Cann Wood (Mr. Bignell); taken September 14th.

CANNÆ, *Steph.* The Reed Wainscot.

West. and Hump., t. 46, fgs. 4-10, *N. crassicornis*; *Newman*, Brit. Moths, p. 269.

This is also a scarce species with us; but has been taken at Torquay and Teignmouth, in August.

TYPHÆ, Thunb. The Bullrush Wainscot.

West. and Hump., t. 46, fgs. 1-3; *Newman*, Brit. Moths, p. 270.

Taken in some numbers, at Torquay and Barnstaple, in August.

EXTREMA, Herrich-Schæffer. The Concolorous.

Newman, Brit. Moths, p. 274, *T. concolor*; *Stainton*, Manual, p. 192.

Taken in Devon by Mr. J. Fust. This insect appears in June.

Family, APAMIDÆ, *Traitschke*.
GENUS, GÖRTYNA, *Ochsenheimer*.

FLAVAGO, Schiff. The Frosted Orange Moth.

West. and Hump., t. 46, fgs. 16, 17; *Newman*, Brit. Moths, p. 279.

This beautiful insect is generally distributed, but by no means common. My friend Mr. J. J. Reading remarks: "The caterpillar is found commonly in the flower-stalks of the foxglove, mining the centre. In Devon and Cornwall it affects this plant in preference to the burdock (*Arctium lappa*), and the water betony (*Scrophularia aquatica*). In Bickleigh Vale and round Plymouth the above observation applies very forcibly, as almost every good-sized stem of foxglove was mined by the larvæ of this insect, as I noted during an excursion with my friend a few years ago. This insect appears twice in the year, July and September.

GENUS, HYDRÆCIA, *Guenée*.

NICTITANS, Linn. The Ear Moth.

West. and Hump., t. 37, fgs. 3, 4; *Newman*, Brit. Moths, p. 280.

A local species. The English name is derived from the silvery marking on its wings, being in form like the human ear. The perfect insect appears in July.

MICACEA, Esper. The Rosy Rustic Moth.

West. and Hump., t. 45, fgs. 14, 15; *Newman*, Brit. Moths, p. 282.

This beautiful and delicately-tinted moth is rare with us; at the same time it is scattered over the entire county; but it would seem to prefer the vicinity of the coast. (?) It appears in September.

GENUS, AXYLINA, *Hübner*.

PUTRIS, Linn. The Flame Moth.

West. and Hump., t. 31, f. 5; *Newman*, Brit. Moths, p. 282.

Common everywhere, in July and August.

GENUS, *XYLOPHASIA*, *Stephens*.

RUREA, *Fabr.* The Clouded-bordered Brindle.

West. and Hump., t. 32, f. 4; *Newman*, Brit. Moths, p. 283.

Generally distributed, and very common; appearing in June and July.

LITHOXYLLA, *Schiff.* The Light Arches.

West. and Hump., t. 32, f. 1; *Newman*, Brit. Moths, p. 284.

Equally common as the former, and appearing at the same time. •

SUBLUSTRIS, *Esper.* The Reddish Light Arches.

West. and Hump., t. 32, f. 2; *Newman*, Brit. Moths, p. 284.

A rare species with us, but has been taken near Harford Bridge, Dartmoor. Mr. Birchall says it is very abundant near Galway. It has also been taken near Dublin. Appears at Midsummer.

POLYODON, *Linn.* The Dark Arches.

West. and Hump., t. 32, f. 3; *Newman*, Brit. Moths, p. 285.

One of the commonest species, and generally distributed all over the county, in grassy places; appearing in June and August.

HEPATICA, *Linn.* The Clouded Brindle.

West. and Hump., t. 32, fgs. 6, 7 (*X. caracterea*); *Newman*, Brit. Moths, p. 285.

Very generally distributed in our wooded districts; comes freely to "sugar;" appearing in July.

SCOLOPACINA, *Esper.* The Slender Clouded Brindle.

West. and Hump., t. 32, f. 8; *Newman*, Brit. Moths, p. 286.

Rather scarce, but has been taken at Barnstaple by Mr. Mathews in considerable numbers. This gentleman first added the species to the list of Devonshire insects. The Rev. J. Hellins captured it in his garden at Exeter. The insect appears in July.

GENUS, *DIPTERYGIA*, *Stephens*.

PINASTRI, *Linn.* The Bird's-wing.

West. and Hump., t. 30, f. 10; *Newman*, Brit. Moths, p. 287.

This is a rare species in Devon; only three or four localities are given for it; namely, Bickleigh Vale, Torquay, and Stoke Wood, near Exeter—one or two specimens only in each place. It appears on the wing in June.

GENUS, **OPOROPHYLA**, *Guenée*.

AUSTRALIS, *Boisd.* The Feathered Brindle.

West. and Hump., t. 24, f. 2; *Newman*, Brit. Moths, p. 289.

Local, and rare. It has been taken at Bolt Head and at Torquay. It would seem to be confined to the coast line. In 1861 Mr. Stewart captured numbers on ivy blossoms at Torquay, and it has been taken at Teignmouth.

GENUS, **LAPHYGMA**, *Guenée*.

EXIGUA, *Hüb.* Small Mottled Willow.

Newman, Brit. Moths, p. 289.

Very rare. Two authorities only have recorded this species in Devon; viz., Dr. Battersby, who took a specimen at Torquay, and Mr. E. Norcombe, of Exeter. The time of appearance is about the middle of October.

GENUS, **NEURIA**, *Guenée*.

SAPONARIA, *Bork.* The Bordered Gothic.

West. and Hump., t. 34, f. 11; *Newman*, Brit. Moths, p. 290.

A rare species, taken only at Slapton, Torquay, and Crabtree. Appears on the wing in July.

GENUS, **HELIOPHOBUS**, *Boisduval*.

POPULARIS, *Fabr.* The Feathered Gothic.

West. and Hump., t. 35, f. 1; *Newman*, Brit. Moths., p. 291.

Common, and generally distributed over the county; appearing in August and September.

HISPIDA, *Hüb.* The Beautiful Gothic.

Newman, Brit. Moths, p. 292.

Not rare where it occurs. It is entirely a coast, or it might almost be called a littoral species, as it is confined to the grassy slopes running down to the sea-shore. I have been out on the Hoe at Plymouth with my friend Mr. J. J. Reading, and captured this insect. It is found clinging to the short stems of grass. The insect is very sluggish, and does not care to move even when a light is turned on to it. The time to take it is from dusk to midnight. This species has also been taken at Torquay, Teignmouth (by Dr. Jordan), and Exmouth by Mr. White. It appears in September and October.

GENUS, **CHARÆAS**, *Stephens*.GRAMINIS, *Linn*. The Antler Moth.*West. and Hump.*, t. 22, f. 8; *Newman*, Brit. Moths, p. 292.

Very rare. Taken once in a shop in Albert Road (formerly Navy Row), Devonport, by Mr. J. J. Reading. Appears in August.

GENUS, **CERIGO**, *Stephens*.CYTHEREA, *Fabr*. The Straw-coloured Underwing.*West. and Hump.*, t. 21, f. 10; *Newman*, Brit. Moths, p. 295.

Very rare, but has been taken at Wembury, Brixham, Berry Pomeroy, Torquay, and Alphington; at the latter place by Mr. D'Orville, on August 20th, 1868.

GENUS, **LUPELINA**, *Boisduval*.TESTACEA, *Schiff*. The Lesser Flounced Rustic.*West. and Hump.*, t. 35, f. 9; *Newman*, Brit. Moths, p. 296.

A very variable species, and taken in considerable numbers in the neighbourhood of Plymouth. It is also very generally distributed throughout the county; appearing in August and September.

CESPITIS, *Schiff*. The Hedge Rustic.*West. and Hump.*, t. 22, fgs. 4, 5; *Newman*, Brit. Moths, p. 297.

Rare, and local. It is a coast insect, being found at Plymouth, Barnstaple, Dartmouth, Exmouth Warren, and Exeter; appearing in September.

GENUS, **MAMESTRA**, *Ochsenheimer*.ANCEPS, *Hüb*. The Doubtful Nutmeg.*West. and Hump.*, t. 35, f. 6; *Newman*, Brit. Moths, p. 299.

This must be regarded as a scarce species with us; at the same time it is distributed all over the county; appearing on the wing in June.

ALBICOLON, *Ochs*. The White Colon.*West. and Hump.*, t. 36, f. 10; *Newman*, Brit. Moths, p. 299.

This has been added to the Devon list by Mr. Mathews (*Newman*, Brit. Moths, p. 300). The insect appear on the wing in May.

FURVA, *Schiff*. The Dusky Brocade.*Newman*, Brit. Moths, p. 300; *Stainton*, Manual, p. 208.

Very rare. It appears only to have occurred once, at Keyham, Devonport.

BRASSICÆ, Linn. The Cabbage Moth.

West. and Hump., t. 36, fgs. 8, 9; *Newman*, Brit. Moths, p. 300.

Much too common generally for gardeners, and widely distributed; appearing in May and July.

PERSICARÆ, Linn. The Dot.

West. and Hump., t. 36, fgs. 11, 12; *Newman*, Brit. Moths, p. 301.

This fine insect is rare in the South, but abundant in the North of Devon; appearing in June and July.

GENUS, APAMEA, Guenée.**BASILINÆ, Schiff.** The Rustic Shoulder-knot.

West. and Hump., t. 35, fgs. 7, 8; *Newman*, Brit. Moths, 302.

A common species, and very generally distributed throughout the county; appearing in June.

GEMINÆ, Ochs. The Dusky Brocade.

West. and Hump., t. 33, f. 2; *Newman*, Brit. Moths, p. 304.

Not so common as the former, but widely distributed; appearing in June and July.

UNANIMIS, Hüb. The Small Clouded Brindle.

West. and Hump., t. 37, f. 5; *Newman*, Brit. Moths, p. 305.

A very uncommon species, but has been captured at Torquay by Dr. Battersby, and at Exeter by myself; appearing in July.

OCULEA, Fab. The Common Rustic.

West. and Hump., t. 37, f. 7; *Newman*, Brit. Moths, p. 306.

One of the most abundant species we have, and subject to perhaps greater variety than any other British species.

Var. FURCA, Haw. The Flame Furbelow.

This is the strongest marked variety, and is equally abundant as the species, and generally distributed.

Var. I-NIGER, Haw. The Letter I.

Not so common as the above. Taken at "sugar" in Stoke Wood, Exeter. A very remarkable and apparently distinct species was captured at Torquay by Mr. J. Buckton. The ground-colour is white, the basal patch, central fascia, and that part of the wing towards the hind margin, brown, the whitish renal stigma showing up conspicuously in the central fascia. This was seen by Mr. H. Doubleday, and a photograph sent to M. Guenée. Both, however, pronounced it to be an extreme variety of *A. "oculea."*

GENUS, *MIANA*, Stephens.

STRIGILIS, *Linn.* The Marbled Minor.

West. and Hump., t. 38, figs. 2-4; *Newman*, Brit. Moths, p. 307.

A very abundant species in gardens and woods in June and July.

Var. LATRUNCULA, *Haw.* The Tawny Marbled.

I only possess one specimen of what I believe to be this variety.

FASCIUNCULA, *Haw.* The Middle-barred Minor.

West. and Hump., t. 38, f. 10; *Newman*, Brit. Moths, p. 308.

Not a common insect, but several may be taken in a season. It appears on the wing in June.

LITEROSA, *Haw.* The Rosy Minor.

West. and Hump., t. 38, f. 1; *Newman*, Brit. Moths, p. 308.

Generally distributed, and tolerably plentiful; appearing on the wing in July.

FURUNCULA, *Schiff.* The Cloaked Minor.

West. and Hump., t. 38, figs. 5-8; *Newman*, Brit. Moths, p. 309.

This is rather a more stable form than the preceding species; that is, so far as I have been enabled to investigate the Devonshire insects. At the same time this has several varieties; one of the most distinct is—

Var. TERMINALIS, *Haw.*

West. and Hump., t. 38, f. 8.

One specimen only has fallen under my notice, and this I took near Exeter. Appears on the wing in July and September.

ARCUOSA, *Haw.* The Small-dotted Buff.

West. and Hump., t. 54, f. 7; *Newman*, Brit. Moths, p. 276. (*Chortodes arcuosa*.)

This must be regarded as a scarce species with us; but has been taken at Bickleigh Vale, Torquay, Lympstone, and Exeter. Taken on the wing at dusk in July.

Family, CARADRINIDÆ, Guenée.

GENUS, *GRAMMESIA*, Stephens.

TRILINEA, *Schiff.* The Treble Lines.

West. and Hump., t. 29, f. 17; *Newman*, Brit. Moths, p. 310.

A generally-distributed species, appearing in June.

Var. BILINEA, Haw.

Newman, Brit. Moths, p. 310 (lower figure).

This variety is not uncommon at Barnstaple, where the species occurs in abundance. It has been taken also at Plymouth and Torquay.

GENUS, *CARADRINA*, *Ochsenheimer.*MORPHEUS, *Huf.* The Mottled Rustic.

West. and Hump., t. 29, fgs. 13, 14; Newman, Brit. Moths, p. 312.

Not common, but sparsely distributed over the entire county.

ALSINES, *Bork.* The Uncertain. .

Newman, Brit. Moths, p. 313.

This is a rare species with us. Mr. Stephens received it from Devonshire. (*Ill. Haus.* vol. ii. p. 156.) Appears on the wing in July.

BLANDA, *Schiff.* The Rustic.

West. and Hump., t. 29, f. 11; Newman, Brit. Moths, p. 314.

Rather common, and generally distributed. Appearing in July.

CUBICULARIS, *Schiff.* The Pale Mottled Willow.

West. and Hump., t. 29, f. 15; Newman, Brit. Moths, p. 314.

Abundant everywhere in grassy and bushy places, and in woods throughout the county; appearing in September. The larvæ of this species live in wheat-ricks, and feed upon the grain, causing great mischief. Mr. D'Orville met with great numbers of the larvæ in ricks of wheat in 1858-59.

Family, NOCTUIDÆ, *Stephens.*GENUS, *RUSINA*, *Stephens.*TENEБROSA, *Hüb.* The Brown Rustic.

West. and Hump., t. 22, f. 9; Newman, Brit. Moths, p. 315.

Not common, but sparsely distributed over the south of the county; appearing in May and June.

GENUS, *AGROTIS*, *Ochsenheimer.*VALLIGERA, *Schiff.* The Archer's Dart.

West. and Hump., t. 23, f. 11; Newman, Brit. Moths, p. 316.

Entirely a coast insect, and found in both the north and south of the county. It is very variable in the ground colour of the wings, and in the markings, but the latter always maintain their position. The species appear on

the wing in July and August. The larvæ feed on *Galium verum*, coming out at night to feed, and by day bury themselves in the sand.

PUTA, Hüb. The Shuttle-shaped Dart.

West. and Hump., t. 23, f. 11; *Newman*, Brit. Moths, p. 317.

Not an uncommon species in the south of the county, and also taken in the north at Barnstaple. It comes freely to "sugar" in July and August.

SUFFUSA, Schiff. The Dark Sword Grass.

West. and Hump., t. 23, f. 2; *Newman*, Brit. Moths, p. 318.

This fine insect is very common, and generally distributed. It comes freely to "sugar." In 1857 it was extremely abundant in the Exeter district.

SAUCIA, Hüb. The Pearly Underwing.

West. and Hump., t. 23, f. 1; *Newman*, Brit. Moths, p. 319.

This, the finest of the British noctua, is common in some seasons. In 1858 Mr. D'Orville took seventy specimens in his orchard at "sugar." In 1869 it was again abundant in the Exeter district; captured also in Plymouth, Barnstaple, Dartmouth, &c. This insect varies very much in the colouring of the wings, from pale greyish-brown to nearly black; in the latter state the markings are nearly, and in some quite, obliterated. It appears on the wing in September.

SEGETUM, W. V. The Common Dart.

West. and Hump., t. 23, f. 3; *Newman*, Brit. Moths, pp. 320-21.

Much too common, and widely distributed. Very destructive in the larva state to wheat and turnip crops, or in fact almost anything that comes in its way. The perfect insect appears in June.

LUNIGERA, Steph. The Crescent Dart.

Stephens, Haust., t. 2, pl. 20, f. 2, p. 113; *West. and Hump.*, t. 23, f. 10; *Newman*, Brit. Moths, p. 325.

A rare species, but has been taken at Bolt Head and Torquay. The moth appears on the wing in August.

EXCLAMATIONIS, Linn. The Heart and Dart.

West. and Hump., t. 24, f. 13; *Newman*, Brit. Moths, p. 326.

One of the most abundant species throughout the county. This insect varies very much in both the colour of its wings and in the intensity of its markings. I have one

specimen with the posterior wings of a pearly-white, and the anterior wings ashy-grey, with the markings very large and dark, rendering them very conspicuous. It is very like the variety figured by Mr. Newman at page 326, lower figure. This insect appears on the wing in June and August.

CORTICEA, Hüb. The Heart and Club.

West. and Hump., t. 23, f. 6; *Newman*, Brit. Moths, p. 327.

An uncommon species, but has been taken at Plymouth, Torquay, and Teignmouth in June and July.

CINEREA, Schiff. The Light-feathered Rustic.

West. and Hump., t. 23, fgs. 8, 9; *Newman*, Brit. Moths, p. 328.

A rare species with us; but has been taken in the Citadel Road, Plymouth, and at Torquay, in June.

RIPÆ, Hüb. The Sand Dart.

West. and Hump., t. 24, f. 3; *Newman*, Brit. Moths, p. 328.

Not uncommon on our sand-hills. The larvæ feed on *Convolvulus soldanella* and hound's tongue, burying themselves in the sand by day and coming out at night to feed. The perfect insect is very variable in the colour of its wings and the intensity of its markings; appearing on the wing in June. It has been found both on our north and south coasts.

CURSORIA, Bork. The Coast Dart.

West. and Hump., t. 24, f. 4; *Newman*, Brit. Moths, p. 329.

This is another coast species; it is rare with us. I took one specimen some years ago on Dawlish Warren.

NIGRICANS, Linn. The Garden Dart.

West. and Hump., t. 24, fgs. 10, 12, 15; *Newman*, Brit. Moths, p. 329.

Not a common species. It has been taken at Bickleigh Vale and Teignmouth by Dr. Jordan, and at Torquay by Mr. J. Buckton; the latter took specimens on July 22nd, and I have captured it at Exeter.

TRITICI, Linn. The White-line Dart.

West. and Hump., t. 24, f. 5; *Newman*, Brit. Moths, p. 330.

This is more a coast species than otherwise. It is sparsely scattered in the north and in the Plymouth district, but is not uncommon in the Exeter district in some seasons. It appears in July.

AQUILINA, Schiff. The Streaked Dart.*West. and Hump.*, t. 24, f. 9; *Newman*, Brit. Moths, p. 331.

Mr. J. J. Reading says: "Taken once at a gas-lamp near the house in which Dr. Leach was born, Hoe-gate House, Plymouth." Mr. J. Buckton has taken it at Torquay, July 22nd, 1865. It has been bred from larvæ taken at Cann Wood by Mr. Bignell.

OBELISCA, Schiff. The Square-spot Dart.*West. and Hump.*, t. 24, f. 11; *Newman*, Brit. Moths, p. 332.

A rare species, but has been captured at Stonehouse, Mount Edgcumbe, and Torquay, at the latter locality July 22nd, by Mr. J. Buckton.

AGATHINA, Dup. The Heath Rustic.*West. and Hump.*, t. 22, f. 3 (*Lytæa albinacula*); *Newman*, Brit. Moths, p. 333.

Very rare. Mr. D'Orville took one specimen in his garden at Alphington a few years ago. Mr. Bignell says: "Larvæ taken freely in April and May by sweeping at night the heath (*Erica cinerea*) in Cann Wood." It appears on the wing in August.

PORPHYREA, Schiff. The True-lover's-knot.*West. and Hump.*, t. 39, fgs. 1, 2; *Newman*, Brit. Moths, p. 334

Not uncommon on our heaths and moors; Haldon, Dartmoor, Woodbury Common; and I have taken it in Exeter. This beautiful moth appears on the wing in July.

PRÆCOX, Linn. The Portland Moth.*West. and Hump.*, t. 39, f. 5; *Newman*, Brit. Moths, p. 334.

This is one of the most beautiful of our native insects when fresh from the pupa. The delicate bloom fades with the death of the moth. It is one of our rarest species. The larva feeds on *Galium verum* (Ladies' Bedstraw), growing on the sand-hills of the coast. It was taken by Captain Blomer on Braunton Burrows, as well as on Dawlish Warren. The insect has been taken by Dr. Jordan on the latter place in August.

RAVIDA, Schiff. The Stout Dart.*West. and Hump.*, t. 25, f. 5 (*Graph. crassa*); *Newman*, Brit. Moths, p. 335.

Rare, and local. The only two places known for it in Devon, so far as I am aware, are Torquay, where it has been taken by Mr. John Buckton, and Alphington, near

Exeter, where it was taken by my friend the late Mr. H. D'Orville. Mr. Buckton took specimens on August 12th, 1863, and again on July 26th, 1865. The larvæ of *Ravida* feed on the roots of thistles and dandelions, and were found by Mr. Buckton on the 6th of May.

LUCERNEA, Linn. The Northern Rustic.

West. and Hump., t. 25, figs. 2, 3; *Newman*, Brit. Moths, p. 336.

A rare species with us. The first Devon specimen I saw I took at Torquay in July, 1863. Mr. Buckton has also taken it there. A crippled female has been taken at Devil's Point, Stonehouse, by Mr. Bignell. This has the habit of flying from flower to flower in the sunshine, like the Gammas. It appears on the wing in July.

GENUS, **TRIPHENA, Ochsenheimer.**

JANTHINA, Schiff. The Lesser-broad-bordered Yellow Underwing.

West. and Hump., t. 21, f. 9; *Newman*, Brit. Moths, p. 338.

Generally distributed over the county, but not what might be called common. It appears on the wing in August.

FIMBRIA, Linn. The Broad-bordered Yellow Underwing.

West. and Hump., t. 21, f. 6; *Newman*, Brit. Moths, p. 339.

One of the finest and most conspicuous of our native insects. It is pretty generally distributed over the county; but in numbers it prevails in the south. It appears on the wing in June and September.

INTERJECTA, Hub. The Least Yellow Underwing.

West. and Hump., t. 21, f. 8; *Newman*, Brit. Moths, p. 340.

Widely but sparsely scattered over the entire county. It appears on the wing in July.

ORBONA, Fab. The Lesser Yellow Underwing.

West. and Hump., t. 21, figs. 4-12; *Newman*, Brit. Moths, p. 341.

Common everywhere in grass-fields where they are shut up for hay. Specimens may be taken from June to September.

PRONUBA, Linn. The Large Yellow Underwing.

West. and Hump., t. 21, figs. 1, 2, 3, 11; *Newman*, Brit. Moths, p. 342.

One of the commonest insects everywhere. They generally hide themselves in the long grass shut up for hay, and when the grass is being cut they fly up before the mowers in great numbers in July.

GENUS, *NOCTUA*, *Guend.**GLAREOSA*, *Esper.*

Stephens, *Haust.* vol. ii., pl. 21, f. 1, p. 159; *West. and Hump.* t. 29, f. 16 (poor); *Newman*, *Brit. Moths*, p. 343.

Rare; but has been taken at Bolt Head, Torquay, Ugborough Beacon, Ivybridge, Dawlish, and Dartmouth in September.

DEPUNCTA, *Linn.* The Plain Clay.

Stephens, *Haust.* v. 2, p. 133; *West. and Hump.* t. 26, f. 14; *Newman*, *Brit. Moths*, p. 344.

A rare species with us. It has, however, been taken at Yealmpton, Harford Bridge, and Exeter by myself; and at Alphington by Mr. D'Orville. It appears on the wing in July.

AUGUR, *Fab.* The Double Dart.

West. and Hump. t. 26, fgs. 6, 7; *Newman*, *Brit. Moths*, p. 344.

A very scarce insect; but has been captured both in the north and south of the county. It appears on the wing in July.

PLECTA, *Linn.* The Flame Shoulder.

West. and Hump. t. 26, f. 7; *Newman*, *Brit. Moths*, p. 345.

Very common everywhere, appearing in June.

C-NIGRUM, *Linn.* The Setaceous Hebrew Character.

West. and Hump. t. 26, fgs. 4, 5; *Newman*, *Brit. Moths*, p. 346.

Very generally distributed in our copses and woods, and tolerably plentiful; appearing in August. Mr. D'Orville has taken it on the 27th October.

DITRAPEZIUM, *Hüb.* The Triple-spotted Clay.

West. and Hump. t. 26, f. 10; *Newman*, *Brit. Moths*, p. 346.

Very rare. Mr. J. J. Reading says: "Several larvæ have been found in the vicinity of Plymbridge and Bickleigh; but these unfortunately did not complete their metamorphoses." The perfect insect has been captured at Barnstaple, Devonport, and Torquay. It appears on the wing in July.

TRIANGULUM, *Fab.* The Double-spotted Square Spot.

West. and Hump. t. 26, f. 3; *Newman*, *Brit. Moths*, p. 347.

Not common; taken at Plymbridge, Torquay, Teignmouth, and Exeter; appearing in June.

BRUNNEA, Schiff. The Purple Clay.

West. and Hump., t. 25, f. 11; *Newman*, Brit. Moths, p. 348.

This beautiful insect is by no means common; taken at Plymouth, Bickleigh Vale, Ivybridge, and Torquay. The larvæ feed on the common fern, *Pteris aquilina*; and the perfect insect appears in June and July.

FESTIVA, Schiff. The Ingrailed Clay.

West and Hump., t. 26, fgs. 1, 2; *Newman*, Brit. Moths, p. 348.

A very generally-distributed species, and very variable in the intensity of the colouring of the wings and markings. The following variety, to which Mr. Haworth applied the distinctive appellation of *Subrufa*, is perhaps as distinct as any of them. This variety I have taken in Stoke Wood, near Exeter. It appears on the wing in June and July.

DAHLII, Hüb. The Barred Chestnut.

West. and Hump., t. 25, f. 12; *Newman*, Brit. Moths, p. 360.

This is by no means a common species. It has been taken in Shaugh Woods, Plymbridge, Torquay, and I have taken it in Stoke Wood, Exeter. It appears on the wing in August.

RUBI, Vieweg. The Small Square Spot.

West and Hump., t. 26, f. 6 (*G. bella*); *Newman*, Brit. Moths, p. 351.

A very generally-distributed insect. Comes freely to "sugar," and I have taken it frequently on the blossoms of the blackberry in August.

UMBROSA, Hüb. The Six-striped Rustic.

West. and Hump., t. 22, f. 1; *Newman*, Brit. Moths, p. 352.

Common in all our woods. Comes very freely to "sugar" in August.

BAJA, Schiff. The Dotted Clay.

West. and Hump., t. 25, fgs. 8, 9; *Newman*, Brit. Moths, p. 352.

A common species in our woods. Comes freely to "sugar" in July and August.

NEGLECTA, Hüb. The Gray Rustic.

West. and Hump., t. 29, f. 10 (*Segetia neglecta*); *Newman*, Brit. Moths, p. 353.

Mr. J. J. Reading says: "Common on heaths and downs, but appears locally distributed." My experience does not confirm this, as only three or four specimens have passed

through my hands in a great many years' collecting. The perfect insect appears on the wing in August and September.

XANTHOGRAPHA, *Schiff.* The Square-spot Rustic.

West. and Hump., t. 29, f. 9; *Newman*, Brit. Moths, p. 354.

One of the most abundant species, and is a perfect pest at "sugar." Appears on the wing in July and August.

Family, ORTHOSIDÆ, *Guenée.*

GENUS, TRACHEA, *Guenée.*

PINIPERDA, *Espr.* The Pine Beauty.

West. and Hump., t. 39, fgs. 3, 4 (*A. spreta*); *Newman*, Brit. Moths, p. 355.

This very distinct and beautiful moth is widely and sparsely distributed in the south of the county—from Devonport to Exeter. It appears early in the spring, and is then captured on the willow blossoms. The larvæ feed on the pine trees; the insect should therefore be looked for wherever these grow. The moth was plentiful at willows, near Plymbridge, 1873.

GENUS, TENIOCAMPA, *Guenée.*

GOTHICA, *Linn.* The Hebrew Character.

West. and Hump., t. 27, f. 1; *Newman*, Brit. Moths, p. 356.

Common everywhere throughout the county; appearing in March and April on the willow blossoms.

LEUCOGRAPHA, *Schiff.* The White Marked.

West. and Hump., t. 22, f. 2 (P); *Newman*, Brit. Moths, p. 357.

Very rare. Taken at Barnstaple by Mr. G. F. Mathews, and Exeter by Mr. H. Moore. The moth appears on the wing in March.

RUBRICOSA, *Schiff.* The Red Chestnut.

West. and Hump., t. 30, fgs. 1, 2; *Newman*, Brit. Moths, p. 357.

Rare; captured at Woodside, Plymouth, Bickleigh Vale, Torquay, Barnstaple, and Exeter. This insect appears on the wing in March, and is to be taken amongst "Quakers" and others frequenting the blossoms of willows.

INSTABILIS, *Schiff.* The Clouded Drab.

West. and Hump., t. 27, fgs. 2, 3; *Newman*, Brit. Moths, p. 358.

Mr. G. F. Mathews informs me "that this species has been taken in North Devon; but he has never seen it either at Dartmouth or Plymouth." A most variable insect; some of the varieties are exceedingly beautiful;

one, named *nebusola*, (Haw.) is a charming insect when fresh from the pupa. I have taken this on willow blossoms in Stoke Wood, Exeter, in March.

POPULETI, Fab. The Lead-coloured Drab.

West. and Hump., t. 27, f. 9; *Newman*, Brit. Moths, p. 360.

Rather a scarce species. Mr. Reading says: "The only specimens known to have occurred within the area of the two counties were taken from gas-lamps at Woodside, Plymouth." In 1863 I could have taken the insect, in almost any number, flying round some poplars growing by the side of the Exe, near Trew's Weir. I supplied all my friends that wanted the species, but since then I have scarcely seen one. The moth appears in March and April.

STABILIS, Schiff. The Common Quaker.

West. and Hump., t. 28, f. 1; t. 29, f. 20; *Newman*, Brit. Moths, p. 360.

Very common on willow blossoms in the spring. March and April.

GRACILIS, Schiff. The Powdered Quaker.

West. and Hump., t. 28, f. 12 (*O. sparsa*); *Newman*, Brit. Moths, p. 361.

Common, and generally distributed; found feeding on willow blossoms in the spring. The eyes of this moth, as well as two or three more of this family, are exceedingly beautiful when seen by the aid of a strong light, such as from a bull's-eye lantern. They reflect the most beautiful and brilliant carnelian tint, or, to take a little licence, are like a rose-coloured diamond.

MINIOSA, Schiff. The Blossom Underwing.

West. and Hump., t. 28, fgs. 2, 3; *Newman*, Brit. Moths, p. 362.

This is also generally distributed, and is met with on willow blossoms in March and April. When fresh the delicate rosy-bloom on this insect is very exquisite, but unfortunately it soon fades away. Mr. Bignell writes me: "Abundant, 13th April, 1866, at willows. I saw about two hundred on one willow bush the size of an umbrella."

MUNDA, Schiff. The Twin-spotted Quaker.

West. and Hump., t. 27, f. 6; *Newman*, Brit. Moths, p. 363.

Very generally distributed throughout the county; appearing with the others of this genus on willow blossoms in the spring.

CRUDA, *Schiff.* The Small Quaker.

West. and Hump., t. 27, fgs. 10, 11; *Newman*, Brit. Moths, p. 363.

Very abundant throughout the county, and, like the rest of them, appearing in March.

GENUS, *ORTHOSISA*, *Guenée*.UPSILON, *Schiff.* The Dingy Shears.

West. and Hump., t. 27, f. 12; *Newman*, Brit. Moths, p. 364.

Local, and rare in most parts of the county, but plentiful near Exeter, in Stoke and Mrs. Merivale's Woods, in July.

LOTA, *Linn.* The Red-line Quaker.

West. and Hump., t. 28, f. 9; *Newman*, Brit. Moths, p. 365.

This species comes freely to "sugar" in all our woods throughout the county in September and October. The larvæ may be found feeding on the young shoots of willows and willows in the spring.

MACILENTA, *Hüb.* The Yellow-line Quaker.

West. and Hump., t. 28, f. 10; *Newman*, Brit. Moths, p. 365.

Common everywhere at "sugar," in the glades of our woods, in September and October.

GENUS, *ANCHOCHELIS*, *Doubleday*.RUFINA, *Linn.* The Flounced Rustic.

West. and Hump., t. 45, fgs. 11, 12; *Newman*, Brit. Moths, p. 366.

Common in our woods, and generally distributed; taken freely at "sugar" in September and October.

PISTACINA, *Schiff.* The Beaded Chestnut.

West. and Hump., t. 28, fgs. 5-8; *Newman*, Brit. Moths, p. 366.

Common in all our woods. Comes freely to "sugar" in September.

LUNOSA, *Haw.* The Lunar Underwing.

West. and Hump., t. 27, fgs. 7, 8, *O. Humilis*; *Newman*, Brit. Moths, p. 368.

Generally distributed, but not common. Comes to "sugar" from September to October. A most variable species as regards the ground colour of the anterior wings. In some specimens these are reddish ochre, and in others a full brown, with the neuration white. The markings, however, retain their position and distinctness. The posterior wings are about the same in both.

LITURA, Linn. The Brown-spot Pinion.*West. and Hump.*, t. 28, f. 4; *Newman*, Brit. Moths, p. 369.

This species would seem to be local, as Mr. J. J. Reading says: "It has not been observed in the Plymouth district, and it approaches westward no further than Totnes, where one specimen was procured." Mr. D'Orville took it in his garden, and I have taken it at "sugar" in Stoke Wood, near Exeter, in some numbers in October.

GENUS, **CERASTIS**, *Ochsenheimer*.**VACCINII, Linn.** The Chestnut.*West. and Hump.*, t. 30, fgs. 5, 6; *Newman*, Brit. Moths, p. 369.

A generally-distributed species, and one of the most abundant, in the spring, on the blossoms of the willows. They may also be captured, in November, on the flowers of the ivy.

SPADICEA, Schiff. The Dark Chestnut.*West. and Hump.*, t. 30, fgs. 7, 8; *Newman*, Brit. Moths, p. 370.

Not so common as the above, but plentiful on the willow blossoms in spring, as also on the ivy flowers in October and November. We take a very beautiful variety, in the Exeter district, on the blossoms of the ivy, principally in the neighbourhood of Topsham. It is almost a uniform very dark chestnut, much darker than the species, with the sub-marginal line bright yellow. The anterior wings have a very fine gloss on them when the insect is fresh, giving it the appearance of polished mahogany. This variety is not common, but several may be taken in the course of a season's collecting.

ERYTHROCEPHALA, Schiff. The Red-headed Moth.*Newman*, Brit. Moths, p. 370.

This insect is extremely rare; one specimen only was captured at "sugar" on November 5th, 1856, at Ivy-bridge. This was the second specimen of the species obtained in England.

GENUS, **SCOPELOSOMA**, *Curtis*.**SATILITIA, Linn.** The Satellite.*West. and Hump.*, t. 30, f. 9; *Newman*, Brit. Moths, p. 371.

One of the most abundant species in our woods and gardens at "sugar." It has been quite a nuisance to me sometimes when sugaring in Stoke Wood, as it would almost monopolise the trees to the exclusion of

others. It appears in October and November, and again in spring, on the willow blossoms. It varies a good deal in the colouration of its wings; but the markings are generally distinct.

GENUS, **DASYCAMPA**, *Guenée*.

RUBIGINEA, *Schiff.* The Dotted Chestnut.

West. and Hump., t. 30, figs. 3, 4; *Newman*, Brit. Moths, p. 372.

This very beautiful and rare moth has been taken in the Plymouth district, Torquay, Teignmouth, Stoke Wood, Exeter, Topsham, Alphington, and Barnstaple. It is taken chiefly on the blossoms of the ivy in October to December; and again in spring on the blossoms of the willow. The neighbourhood of Topsham has been, perhaps, more prolific of this insect than anywhere else in England.

GENUS, **HOPORINA**, *Boisduval*.

CROCEAGO, *Schiff.* The Orange Upperwing.

West. and Hump., t. 45, figs. 9, 10; *Newman*, Brit. Moths, p. 373.

Generally but sparsely distributed over the county. It frequents the willow blossoms in the spring. It is taken also on ivy blossoms and at "sugar" in October and November.

GENUS, **XANTHIA**, *Ochsenheimer*.

CITRAGO, *Linn.* The Orange Sallow.

West. and Hump., t. 45, figs. 7, 8; *Newman*, Brit. Moths, p. 374.

Torquay would seem to be its head-quarters, although it has been captured rather freely at Barnstaple. At Plymouth and Exeter it is rather rare. It should be looked for in September.

CERAGO, *Hüb.* The Sallow.

West. and Hump., t. 45, figs. 3, 4 (*X. fulvago*); *Newman*, Brit. Moths, p. 374.

This beautiful insect is not common, and, so far as I am aware, has been captured only in the south of the county, from Plymouth to Exeter. The caterpillar feeds on the catkins of the willows, and the perfect insect appears in September.

FLAVAGO, *Fab.* The Pink-barred Sallow (*X. silago*), *Hüb.*

West. and Hump., t. 45, figs. 1, 2; *Newman*, Brit. Moths, p. 375.

More generally distributed than the former; but rare in the Exeter district. It appears on the wing in September. It is common at Plymbridge in the larva state.

AURIGO, Schiff. The Barred Sallow.

West. and Hump., t. 45, f. 5; *Newman*, Brit. Moths, p. 375.

A rare species with us, and, so far as I am aware, confined to the southern division of the county. This, like the others of this group, appears on the wing in September.

FERRUGINEA, Schiff. The Brick.

West. and Hump., t. 45, f. 13; *Newman*, Brit. Moths, p. 376.

A very generally-distributed species, appearing in September. Mr. D'Orville says: "I have taken the larva feeding on rhubarb in May, and it has been taken feeding on the seeds of the ash." The moth comes freely to "sugar."

GENUS, **CIRCEIDIA**, *Guenée*.**XERAMPELINA, Hüb.** The Centre-barred Sallow.

Newman, Brit. Moths, p. 377; *Stainton*, Manual, vol. i. p. 254.

Very rare. Only two localities are given for it in the county; namely, Bickleigh and Torquay. It appears on the wing in September.

Family, **COSMIDÆ**, *Guenée*.GENUS, **TETHEA**, *Ochsenheimer*.**SUBTUSA, Schiff.** The Olive.

West. and Hump., t. 44, fgs. 1-4; *Newman*, Brit. Moths, p. 379.

This and the next are apparently found only in the southern part of the county—from Bolt Head, Dartmouth, Torquay, Teignmouth, and Exeter; but it must be regarded as an uncommon species, appearing in July.

RETUSA, Linn. The Double Kidney.

West. and Hump., t. 44, fgs. 2, 3; *Newman*, Brit. Moths, p. 379.

This was considered very rare. A few years ago Mr. D'Orville and myself were the only lepidopterists in Devonshire that possessed native specimens of this species. It is now found to be common at Plymbridge and Cann Wood. The larvæ have been found on June 2nd, and the imagos come out August 3rd. Mr. G. F. Mathews says: "The larvæ were abundant June 18th, 1875, near Dartmouth; but scarcely one was to be found in 1876 and 1877. The moth appears on the wing in August.

GENUS, **COSMIA**, *Ochsenheimer*.TRAPEZINA, *Linn.* The Dun-bar.*West. and Hump.*, t. 44, f. 13; *Newman*, Brit. Moths, p. 381.

Frequent, but scarcely a common species; widely distributed in the south in woods and gardens in July and August. Specimens vary very much in the ground-colour of the wings, some being pale yellowish, or nearly white, and others graduating down to a dingy brown colour.

PYRALINA, *Schiff.* The Lunar-spotted Pinion.*West. and Hump.*, t. 44, fgs. 8, 9; *Newman*, Brit. Moths, p. 333.

Rare, but has been taken by Mr. D'Orville at Alphington, 1857-59, and by the Rev. G. C. Green at Modbury, where it is not uncommon. It appears on the wing in August.

DIFFINIS, *Linn.* The White-spotted Pinion.*West. and Hump.*, t. 44, fgs. 10, 11; *Newman*, Brit. Moths, p. 383.

By no means a common insect; and I have records only from the south of the county. It appears on the wing in July and August.

AFFINIS, *Linn.* The Lesser-spotted Pinion.*West. and Hump.*, t. 44, f. 12; *Newman*, Brit. Moths, p. 383.

Not common, but more frequent than the one above, and more widely distributed, being found in the north of the county, as well as the south. It appears on the wing in July and August.

GENUS, **EREMOBIA**, *Stephens*.OCHROLEUCA, *Schiff.* The Dusky Sallow.*West. and Hump.*, t. 50, f. 5; *Newman*, Brit. Moths, p. 384.

I introduce this species on the authority of Mr. H. Jenner Fust, *Trans. Ent. Soc.*, 3rd Series, vol. iv. p. 439.

Family, **HADENIDÆ**, *Guenée*.GENUS, **DIANTHÆCIA**, *Boisduval*.CARPOPHAGA, *Bork.* The Tawny Sheers.*West. and Hump.*, t. 34, f. 1; *Newman*, Brit. Moths, p. 385.

Rare; but taken in the southern division of the county, from Plymouth to Exeter. This species varies greatly in the colouration of the wings. The insect, as its name implies, feeds on the seeds in the capsules of the bladder campion, *Silene inflata*. The perfect insect may be found on the wing in June.

CAPSINCOLA, Schiff. The Pod-lover.

West. and Hump., t. 34, fgs. 7-10; *Newman*, Brit. Moths, p. 386.

Generally but sparsely distributed; of much more frequent appearance than the former, and found on the wing in August.

CUCUBALI, Schiff. The Campion.

West. and Hump., t. 34, fgs. 5, 6; *Newman*, Brit. Moths, p. 388.

Generally but sparsely distributed. The caterpillar feeds on the seeds of the bladder campion, *Silene inflata*; and the perfect insect appears in June and July.

CONSPERSA, Schiff. The Marbled Coronet.

West. and Hump., t. 39, f. 10; *Newman*, Brit. Moths, p. 389.

Very rare, and local; taken at Bolt Head, Torquay, Dartmouth, Teignmouth, and Barnstaple. This is perhaps the most beautiful of the whole group. The caterpillar feeds on the seeds of *Lychnis flos-cuculi*; and the perfect insect appears on the wing in June.

GENUS, **HECATERA**, *Guendé*.**SERENA, Schiff.** The Small Ranunculus.

West. and Hump., t. 40, f. 13; *Newman*, Brit. Moths, p. 392.

Not common, but taken in some numbers at Salcombe, Torquay, and Teignmouth. It would therefore appear from this that it is with us at least a southern insect. The larvæ, Mr. Reading observes, are found on the corn sow-thistle (*Sonchus arvensis*), and also on the common sow-thistle (*Sonchus oleraceus*), late in the summer. The insect is found on the wing in the end of June and July; but more frequently found on walls covered more or less with lichens of various colours. The colour of the wings of the insect being very nearly like these, it is extremely difficult to discover it when so placed.

GENUS, **POLIA**, *Ochsenheimer*.**CHI, Linn.** The Grey Chi.

West. and Hump., t. 40, f. 15; *Newman*, Brit. Moths, p. 394.

Taken at Plymouth, Torquay, Teignmouth, and Modbury, in August.

FLAVICINCTA, Schiff. The Large Ranunculus.

West. and Hump., t. 40, f. 9; *Newman*, Brit. Moths, p. 396.

This fine insect is not uncommon at Plymouth, both at "sugar" and at gas-lamps. It is also frequent at Teignmouth and Torquay; appearing in September.

GENUS, **DASYPOLIA**, *Guenée*.

TEMPLI, *Thunb.* The Brindled Ochre.

West. and Hump., t. 39, f. 11; *Newman*, Brit. Moths, p. 277.

Taken only, so far as I am aware, in the southern division of the county, from Plymouth to Exeter. The insect is particularly attracted to gas-lamps, on still, warm nights, in October and November. I have taken it off the gas-lamps at Torquay, and it has been captured at Exeter.

GENUS, **EPUNDA**, *Duponchel*.

LUTULENTA, *Schiff.* The Deep-brown Dart.

West. and Hump., t. 22, f. 6 (*Charæas fusca*); *Newman*, Brit. Moths, p. 396.

Rather a scarce species, but taken along the southern division, from Plymouth to Alphington, where Mr. D'Orville took it in his garden in October.

NIGRA, *Haw.* The Black Rustic.

West. and Hump., t. 22, f. 7; *Newman*, Brit. Moths, p. 397.

Not a common species in our woods in the south of the county, from Plymouth to Alphington; at the latter place Mr. D'Orville used to take it at "sugar" in his garden. The larvæ common at Dartmouth. (Mr. G. F. Mathews.)

VIMINALIS, *Fab.* The Minor Shoulder-knot.

West. and Hump., t. 44, f. 5 (*Cleo-viminalis*); *Newman*, Brit. Moths, p. 398.

Sparsely distributed in the woody districts; the larvæ on buds of white-thorn and on willow; the perfect insect appears in July.

LICHENEÆ, *Hüb.* The Feathered Ranunculus.

Newman, Brit. Moths, p. 399.

The head-quarters of this species would seem to be Plymouth, where Mr. Reading used to take it plentifully. It has also been captured all along the south coast as far as Alphington. Mr. G. F. Mathews has taken it at Barnstaple. Taken in September and October.

GENUS, **MISELIA**, *Ochsenheimer*.

OXYACANTHÆ, *Linn.* The Green-brindled Crescent.

West. and Hump., t. 39, f. 12; *Newman*, Brit. Moths, p. 402.

This beautiful moth is common in most damp woods in the county. A few years ago these insects were so abundant, in Mrs. Merivale's woods, near Exeter, that they actually

covered the "sugar." The green gloss on the wings when recent gradually fades away to a brownish hue, giving the insect quite a different appearance. They appear on the wing in September.

GENUS, **AGRIOPIS**, *Boisduval*.

APRILINA, *Linn.* The Marvel-du-Jour.

West. and Hump., t. 39, fgs. 13, 14; *Newman*, Brit. Moths, p. 402.

One of the most beautiful of all our British insects. It is equally distributed over the county, and is taken in the same localities, and under the same conditions, as the above. The same observation would apply to this as to the former—the beautiful and delicate green of the wings fades very much on the death of the insect. Taken in September and October.

GENUS, **PHILOGOPHORA**, *Ochsenheimer*.

METICULOSA, *Linn.* The Angle Shades.

West. and Hump., t. 48, fgs. 5, 6; *Newman*, Brit. Moths, p. 403.

An abundant species everywhere; appearing in April and May, and again in autumn.

GENUS, **EUPLEXIA**, *Stephens*.

LUCIPARA, *Linn.* The Small Angle Shades.

West. and Hump., t. 35, f. 4; *Newman*, Brit. Moths, p. 405.

This pretty little species is widely distributed in the south, and has been taken at Barnstaple. Mr. D'Orville has taken it at "sugar" in his garden at Alphington, in July.

GENUS, **APLECTA**, *Guenée*.

HERBIDA, *Schiff.* The Green Arches.

West. and Hump., t. 40, f. 7; *Newman*, Brit. Moths, p. 405.

Sparsely distributed over the southern half of the county. I have not heard of it in the north. It is rare in the Exeter district. It appears in August and September.

NEBULOSA, *Och.* The Grey Arches.

West. and Hump., t. 40, fgs. 2, 3; *Newman*, Brit. Moths, p. 407.

Rather more frequent than the former, but is found in similar localities, and comes also to "sugar" in June and July.

TINCTA, *Bork.* The Silvery Arches.

West. and Hump., t. 40, f. 6; *Newman*, Brit. Moths, p. 408.

This fine insect is scarce; taken in the Plymouth district, in July.

ADVENA, *Schiff.* The Pale-shining Brown.

West. and Hump., t. 40, f. 1; *Newman*, Brit. Moths, p. 409.

Scarce, and found in similar localities to the preceding; but, so far as I know, it is not found in the Exeter district; taken in July.

GENUS, **HADENA**, *Ochsenheimer*.

ADUSTA, *Esp.* The Dark Brocade.

West. and Hump., t. 33, f. 1; *Newman*, Brit. Moths, p. 412.

Generally distributed, and common, particularly in the south; appearing in July.

PROTEA, *Schiff.* The Brindled Green.

West. and Hump., t. 34, fgs. 3, 4; *Newman*, Brit. Moths, p. 413.

Generally and commonly distributed over the whole county; appearing in September.

GLAUCA, *Hüb.* The Glaucus Shears.

West. and Hump., t. 33, fgs. 7, 8; *Newman*, Brit. Moths, p. 414.

Rare; taken by Mr. D'Orville at Alphington. It appears on the wing in June.

DENTINA, *Schiff.* The Shears.

West. and Hump., t. 33, fgs. 9, 10, (*H. plebeia*); *Newman*, Brit. Moths, p. 415.

Not uncommon, and widely distributed. I used to take them in great numbers, some years ago, flying round some poplar trees near Trew's Weir, below Exeter. This species appears in June and July.

CHENOPODII, *Schiff.* The Nutmeg.

West. and Hump., t. 36, f. 13; *Newman*, Brit. Moths, p. 416.

Only two or three localities are given for this species; namely, Barnstaple, Millbrook, and Alphington; but it is rare. The larvæ feed on *Chenopodium* and *Atriplex*, leaves and seeds, on the latter principally; and the perfect insect appears in July.

ATRIPLICIS, *Linn.* The Great Orach Moth.

West. and Hump., t. 39, fgs. 6, 7; *Newman*, Brit. Moths, p. 417.

Bred from larvæ taken near Plymouth by Mr. H. S. Bishop.

OLERACEA, *Linn.* The Bright-line Brown-eye.

West. and Hump., t. 36, fgs. 4, 5; *Newman*, Brit. Moths, p. 419.

One of the most common species; in every garden; appearing in May and June.

SUASA, Schiff. The Dog's Tooth.*West. and Hump.*, t. 36, f. 6; *Newman*, Brit. Moths, p. 418.

Very rare. I have one specimen, captured in this district; and there is one mentioned by Mr. H. J. Fust. The insect appears in June.

PISI, Linn. The Broom Moth.*West. and Hump.*, t. 36, fgs. 2, 3; *Newman*, Brit. Moths, p. 419.

Generally distributed, and frequent. Common in the Plymouth district, and on the slopes of the tors of Dartmoor; but not common in the Exeter district.

THALASSINA, Huf. The Pale-shouldered Brocade.*West. and Hump.*, t. 33, f. 3; *Newman*, Brit. Moths, p. 420.

Very generally distributed, but not common; appearing in August.

CONTIGUA, Schiff. The Beautiful Brocade.*West. and Hump.*, t. 33, fgs. 5, 6; *Newman*, Brit. Moths, p. 421.

Very rare. Mr. D'Orville and myself appear to be the only collectors that have met with this species. It appears on the wing in June.

GENISTÆ, Bork. The Light Brocade.*West. and Hump.*, t. 33, f. 4; *Newman*, Brit. Moths, p. 422.

Rare; but has been captured in various parts of the county, both north and south. It appears on the wing in May and June.

*Family, XYLINIDÆ, Guenée.***GENUS, XYLOCAMPA, Guenée.****LITHORHIZA, Bork.** The Early Gray.*West. and Hump.*, t. 34, f. 2; *Newman*, Brit. Moths, p. 424.

Widely distributed, and rather common on the flowers of shallows in March and April. In some seasons quite common in the Exeter district.

GENUS, CLOANTHA, Boisduval.**SOLIDAGINIS, Hüb.** The Golden-rod Brindle.*West. and Hump.*, t. 31, f. 8; *Newman*, Brit. Moths, p. 425.

"Only taken by Lieut. Reed, 12th Regiment, who took it while 'sugaring' at Torquay." (Mr. Reading.)

GENUS, CALOCAMPA, Stephens.**VETUSTA, Hüb.** The Red Sword-grass.*West. and Hump.*, t. 31, fgs. 11, 12; *Newman*, Brit. Moths, p. 426.

Common in our woods in the south; comes freely to "sugar;" appearing in September.

EXOLETA, *Linn.* The Sword-grass.

West. and Hump., t. 31, fgs. 9, 10; *Newman*, Brit. Moths, p. 427.

This fine insect is common in some seasons in this district.

Mr. D'Orville has taken it in abundance in his garden at Alphington at "sugar;" and I have taken numbers of them in Stoke Wood, near Exeter, in September and November. The larvæ Mr. D'Orville has found feeding on dock and asparagus.

GENUS, *XYLINA*, *Stephens.*RHIZOLITHA, *Schiff.* The Grey Shoulder-knot.

West. and Hump., t. 31, f. 6 (*X. Lambda*); *Newman*, Brit. Moths, p. 428.

Generally distributed, and rather common; appearing in September and March, on ivy and willow blossoms.

SEMIBRUNNEA, *Haw.* The Tawny Pinion.

West. and Hump., t. 31, f. 3; *Newman*, Brit. Moths, p. 429.

A rare species, sparsely scattered over the county, both north and south. It comes to "sugar" and ivy blossoms in September and October. The larvæ feed on the ash.

PETRIFICATA, *Schiff.* The Pale Pinion.

West. and Hump., t. 31, f. 4; *Newman*, Brit. Moths, p. 430.

Generally distributed over the county, and not uncommon. Comes freely to "sugar" and ivy blossoms in September and October. Mr. D'Orville bred this species several times. The first lot came out the end of August; the larvæ fed on bramble and willow. Bred some more in 1858; the larvæ fed on apple. They will also eat the foliage of lilac.

GENUS, *CUCULLIA*, *Schrank.*VERBASCI, *Linn.* The Mullen.

West. and Hump., t. 48, fgs. 7, 8; *Newman*, Brit. Moths, p. 430.

A very abundant species, especially in the larva state, throughout the county. Mr. Mathews says: "I am positive that had any one desired to have taken ten or twenty thousand" (of the larvæ) "it might easily have been done." This was on Braunton Burrows in 1858, 1859, and 1860. The moth appears in April and May.

SCROPHULARIÆ, *Schiff.* The Water Betony.

West. and Hump., t. 48, fgs. 9, 10; *Newman*, Brit. Moths, p. 431.

Frequent in the larva state, and generally distributed over the county; the perfect insect appearing on the wing in May.

It is impossible, I believe, to distinguish between these two so-called species. Their colouring and markings are precisely alike; the size of the insect varies in both; and the larvæ feed equally well on the same plants. The very slight difference in the markings of the larvæ, if these are really permanent, is scarcely sufficient ground to separate these two forms.

ABSINTHII, Linn. The Wormwood Shark.

West. and Hump., t. 49, f. 5; *Newman*, Brit. Moths, p. 434.

Very rare. Mr. D'Orville bred specimens from larvæ found in his garden at Alphington, feeding on wormwood plants, in 1862, and again in 1866. The larvæ have also been taken at Wembury. Mr. Dale, in his notes to me just previous to his death, says that this insect has been taken at Teignmouth and High Bickington. Mr. Bignell says it was common at Clinnicott, near Yealmspton, in 1875; and Mr. G. F. Mathews tells me that the larvæ were abundant near Dartmouth. The moth appears in July.

CHAMOMILLÆ, Schiff. The Chamomile Shark.

West. and Hump., t. 49, fgs. 14, 15; *Newman*, Brit. Moths, p. 435.

Mr. Reading says: "The larvæ are found abundantly on *Pyrethrum inodorum* and *maritimum*, but not on *anthemis* nor *matricaria*. The chief habitats are the semi-marine shores and wastes bordering Plymouth Sound and the estuaries of the Yealm, Plym, Tamar, and Lynher." The larvæ were also abundant near Dartmouth. (Mr. Mathews.) So far as I am aware this species has not been found in the Exeter district, although we have plenty of the food-plant growing about Topsham, &c. According to Mr. Reading the insect is common, but local; that is, as regards the Plymouth district. The moth appears in April.

UMBRATICA, Linn. The Shark.

West. and Hump., t. 49, f. 8; *Newman*, Brit. Moths, p. 436.

Generally distributed, and frequent in the Exeter district; at the same time it cannot be considered common anywhere.

Family, **HELIOTHIDÆ**, Guenée.
GENUS, **HELIOTHIS**, Ochsensheimer.

MARGINATA, Fab. The Bordered Sallow.

West. and Hump., t. 53, f. 1; *Newman*, Brit. Moths, p. 437.

This is a southern species. I have not heard of its being

captured or seen in the north of the county. Plentiful in the larva state at Dartmouth. It is a very distinct and beautiful insect, appearing in May and July.

PELTIGERA, Schiff. The Bordered Straw.

West. and Hump., t. 53, figs. 2, 3; *Newman*, Brit. Moths, p. 437.

This pretty species was regarded a few years ago as very scarce, and was a desideratum to most, except the very best, collections of native Lepidoptera; but since then its habits in the larva state have been discovered, and the species is now seen in most collections. The larvæ feed on two or three plants, but seem to prefer the Spinous Restharrow (*Ononis arvensis*, variety *Spinosa*) and the henbane (*Hyoscyamus niger*), which grows on the sand-hills on the coast. It is met with now from Plymouth Hoe to Exmouth Warren, and has been captured by Mr. D'Orville at "sugar" in his garden. It appears on the wing in September and October.

ARMIGERA, Hüb. The Scarce-bordered Straw.

Newman, Brit. Moths, p. 439; *Stainton*, Manual, vol. i. p. 291.

This beautiful moth is rare, and very sparsely distributed both in the north and south of the county; but although rare with us, it is a great pest in the larva state in the cotton plantations in the State of Louisiana, in America, where it is called the Army-worm. (See *Athenæum*, September 29th, 1866, p. 406.) But this species is not only found in America and England; it, like *Deiopeia pulchella*, is a cosmopolite, being found in almost every part of the world. It appears on the wing with us in September and October. Mr. Buckton took it at Torquay on September 28th.

GENUS, **ANARTA**, *Ochsenheimer*.

MYRTILLI, Linn. The Beautiful Yellow Underwing.

West. and Hump., t. 53, f. 7; *Newman*, Brit. Moths, p. 441.

Very scarce; taken on Bickleigh Down, Brent Hill, near Tavistock, Torquay, and Haldon. It appears on the wing in June.

GENUS, **HELIODES**, *Gueneé*.

ARBUTI, Fab. The Small Yellow Underwing.

West. and Hump., t. 53, f. 10; *Newman*, Brit. Moths, p. 442.

Not common; is met with flitting about amongst ivy herbage in open spaces in May and June.

Section, MINORES.

Family, ACONTIDÆ, Guéné.

GENUS, *AGROPHILA*, Boisduval.**SULPHURALIS**, *Linn.* The Spotted Sulphur.*West. and Hump.*, t. 53, f. 16; *Newman*, Brit. Moths, p. 442.

Extremely rare; once taken by Mr. E. Norcombe, in the Exeter district. This moth flies in the daytime in the hot sun, in dry grassy places, in June.

GENUS, *ACONTIA*, *Ochsenheimer*.**LUCTUOSA**, *Schiff.* The Four-spotted.*West. and Hump.*, t. 53, f. 11; *Newman*, Brit. Moths., p. 443.

Very local, but common where it occurs—High Bickington (Mr. Dale), Torquay, in profusion (Dr. Battersby), Exmouth (Dr. Jordan). It appears on the wing in May and August, in clover-fields, and feeds on the nectar of the flowers. In abundance in May, 1867, at Torquay.

CANDEFACTA, *Auct.**Newman*, Brit. Moths, p. 447; *Entomologists' Annual*, 1859.

First taken in Devon by Dr. Jordan, who captured a specimen flying round a lamp at Teignmouth. "In 1858," Dr. Battersby says, "we found *Micra parva*" (this is what the above was supposed to be at the time) "only in one place, and saw but two specimens, both of which were captured. They, as well as *Ostrina*, lay very close among the grass and brambles, and when disturbed did not fly more than a yard or two, *Ostrina* settling on the ground and *Parva* on the plants."

Family, ERASTRIDÆ, *Stephens*.GENUS, *ERASTRIA*, *Ochsenheimer*.**FUSCULA**, *Schiff.* The Marbled White-spot.*West. and Hump.*, t. 53, fgs. 23, 24; *Newman*, Brit. Moths, p. 445.

Generally distributed, but not common. It is found in wooded districts in June. The larvæ have been taken in Cann Wood, feeding at night on *Molinia cærulea*, in August and September.

Family, ANTHOPHILIDÆ, *Guéné*.GENUS, *HYDRELIA*, *Guéné*.**UNCANA**, *Linn.* The Silver Hook.*West. and Hump.*, t. 53, f. 15; *Newman*, Brit. Moths, p. 446.

Rare, and exceedingly local. One locality only is known for it in Devon, and that is on a bog near the Great Mis Tor on Dartmoor. It appears on the wing in June.

GENUS, *MICRA*, *Guenée*.

OSTRINA, *Hüb.* The Purple Marbled.

West. and Hump., t. 53, f. 21; *Newman*, *Brit. Moths*, p. 447.

Extremely rare. Five specimens were taken at Torquay, the first by Miss Battersby. These were discovered scattered along the coast, half-way down the cliffs to the water's edge. The insect appears in June.

Group, *QUADRIFIDÆ*, *Guenée*.

Section, *VARIEGATÆ*, *Guenée*.

Family, *PLUSIIDÆ*, *Boisduval*.

GENUS, *HABROSTOLA*, *Oechsenheimer*.

URTICÆ, *Hüb.* The Spectacle.

West. and Hump., t. 50, fgs. 8, 9; *Newman*, *Brit. Moths*, p. 449.

Generally distributed; but not common. It appears on the wing in June, and again in August.

TRIPLASIA, *Linn.* The Dark Spectacle.

West. and Hump., t. 50, fgs. 6, 7; *Newman*, *Brit. Moths*, p. 450.

The same as the above. The caterpillars of both feed on the nettle in September and October, and the perfect insects appear in June and August.

GENUS, *PLUSIA*, *Oechsenheimer*.

ORICHALCEA, *Fab.* The Scarce Burnished Brass.

West. and Hump., t. 52, f. 7; *Newman*, *Brit. Moths*, p. 451.

Mr. Reading says: "This beautiful moth was added to the insect fauna . . . by Mr. E. Lethbridge, who secured an example near Plymouth. A second specimen was obtained from under the Hoe. Both these insects were captured during the day, and while they were flying from flower to flower." It appears in August.

CHRYSIDES, *Linn.* The Burnished Brass.

West. and Hump., t. 52, f. 6; Caterpillar, t. 51; *Newman*, *Brit. Moths*, p. 453.

Generally distributed, and tolerably plentiful in some seasons, flying in the daytime, or just at dusk, from flower to flower in June, and again in August.

FESTUCA, *Linn.* The Gold Spot.

West. and Hump., t. 51, f. 9; *Newman*, *Brit. Moths*, p. 451.

Mr. Newman has transposed his wood-cuts of these two species; the one on page 451 should be in the place of the figure on page 453. This beautiful species is rare,

and, so far as I am aware, is found only in the south of the county, from Plymouth to Exeter. It appears on the wing in August.

IOTA, Linn. The Plain Golden Y.

West. and Hump., t. 51, f. 4; *Newman*, Brit. Moths, p. 453.

Widely distributed, and not uncommon. Appearing on the wing in June and July.

V.-AUREUM, Guenée. The Beautiful Golden Y.

West. and Hump., t. 52, f. 1; *Newman*, Brit. Moths, p. 454

A rare species with us, and apparently found only in the south of the county. It appears on the wing in July. This insect and the above, "Iota," are so much alike, that they are frequently mistaken one for the other; but there is one thing to be observed, *V.-aureum* has always, and more especially when fresh, a deep rosy hue all over it.

GAMMA, Linn. The Silver Y.

West. and Hump., t. 51, f. 7; *Newman*, Brit. Moths, p. 455.

An abundant species everywhere, flitting about in the bright sunshine from flower to flower.

NI, Hüb. The Ni Moth.

Hübner, 284, Engr. 595, A, B, C (*Ajoutée*); *Newman*, Brit. Moths, p. 455.

A single example of this species was captured by Mr. D'Orville at Alphington, on flowers of the red valerian, on August 13th, 1868. Great care is required in the discrimination of this insect from *P. gamma*, and more especially some of the varieties of the latter. This moth, like several other natives of this country, is somewhat of a cosmopolite, being found in several parts of Europe, and in North and South America.

INTERROGATIONIS, Linn. The Scarce Silver Y.

West. and Hump., t. 51, f. 6; *Newman*, Brit. Moths, p. 456.

Two specimens of this northern species have been captured in Devon; the first by Lieutenant R. B. Reed, of the 12th Regiment, who took it at Torquay; the next was taken by Mr. J. S. Dell, of Devonport, who captured his specimen near Cann Quarry, Bickleigh Vale. It appears on the wing in June.

Family, GONOPTERIDÆ, Guenée.

GENUS, GONOPTERA, Latreille.

LIBATRIX, Linn. The Herald.

West. and Hump., t. 41, f. 17, t. 42, f. 118; *Newman*, Brit. Moths, p. 456.

Generally distributed, and rather common. A very sluggish and sleepy insect, frequently found sticking about dwellings. I don't remember to have ever seen this insect on the wing. It appears in August and September.

Section, INTRUSÆ, Guenée.

Family, AMPHIPYRIDÆ, Guenée.

GENUS, AMPHIPYRA, Ochsenheimer.

PYRAMIDEA, Linn. The Copper Underwing.

West. and Hump., t. 30, f. 11; *Newman*, Brit. Moths, p. 457.

This beautiful insect comes freely to "sugar." It is widely distributed, and common in some localities. It appears on the wing in August.

TRAGOPONIS, Linn. The Mouse.

West. and Hump., t. 30, fgs. 13, 14; *Newman*, Brit. Moths, p. 458.

Widely distributed, not so common as the last, comes to "sugar," and appears on the wing in July and August.

GENUS, MANIA, Treitschke.

TYPICA, Linn. The Gothic.

West. and Hump., t. 30, fgs. 17, 18 (*L. typica*); *Newman*, Brit. Moths, p. 458.

The generic name applies very well indeed to the wild flight of this species. It is generally distributed over the entire county, frequents damp places, and comes freely to "sugar." Appears on the wing in July.

MAURA, Linn. The Old Lady.

West. and Hump., t. 55, fgs. 1, 2; *Newman*, Brit. Moths, p. 459.

Generally distributed over the county, but not common. This loves damp places, near water, and flies about in the wildest manner just at dusk; comes to light and "sugar." It is taken on the wing in June and August.

Family, TOXOCAMPIDÆ, Guenée.

GENUS, TOXOCAMPA, Guenée.

PASTINUM, Treit. The Black Neck.

West. and Hump., t. 54, fgs. 10, 11; *Newman*, Brit. Moths, p. 461.

Not common, except at Barnstaple and Ilfracombe; but taken in several localities in the south; namely, Wembury, Kingsbridge-road, Torquay, and Teignmouth. This is met with on the wing towards the end of June.

CRACCA, Schiff. The New Black Neck.

Entomologist's Annual, 1863, f. 3; *Newman*, Brit. Moths, p. 461.

Very rare. The Rev. E. Horton took four specimens of this species on the north coast of Devon, on July 24th to 28th, 1861. Larvæ were afterwards found on *Vicia sylvatica* in the locality where the imagos were taken. The larvæ have been described by Mr. Buckler, and taken at Torquay by Mr. J. Crocker.

Family, STILBIIDÆ, Guenée.

GENUS, STILBIA, Stephens.

ANOMALA, Harw. The Anomalous.

West. and Hump., t. 54, fgs. 8, 9; *Newman*, Brit. Moths, p. 462.

Local, but not common; perhaps more abundant at Torquay than any other locality. I have captured it in Stoke Wood, near Exeter, but it is rare here; and it has been taken at Plymbridge, Bickleigh Down, Wembury, and on Haldon.

Section, LIMBATÆ, Guenée.

Family, CATOCALIDÆ, Guenée.

GENUS, CATOCALÆ, Schrank.

NUPTA, Linn. The Red Underwing.

West. and Hump., t. 55, f. 5; *Newman*, Brit. Moths, p. 464.

This beautiful moth is not found in the Plymouth district, but has been taken at Torquay and Teignmouth. At Alphington Mr. D'Orville took specimens freely at "sugar" in his garden in 1859-60. I have found them occasionally sticking on walls in the neighbourhood of poplar trees. They appear on the wing in September and October.

PROMISSA, Schiff. The Light Crimson Underwing.

West. and Hump., t. 56, fgs. 3-15; *Newman*, Brit. Moths, p. 466.

This charming insect has been taken at Chagford by the Rev. J. Hellins. It is found on the wing in August.

Section, SERPENTINÆ, Guenée.

Family, EUCLIDIDÆ, Guenée.

GENUS, EUCLIDIA, Oechsenheimer.

MI, Linn. The Mother Shipton.

West. and Hump., t. 56, fgs. 11, 12.

Mr. Reading says: "Not uncommon, and generally distributed." It must however be regarded as uncommon in the Exeter district. The insect appears in June.

GLYPHICA, *Linn.* The Burnet Noctua.*West. and Hump.*, t. 56, f. 10; *Newman*, Brit. Moths, p. 469.

Generally distributed, and common in the south-west of the county, but sparsely so to the east and north; appears on the wing in May and June.

Family, POAPHILIDÆ, *Guenée*.
GENUS, PHYTOMETRA, *Haworth*.

ÆNEA, *Schiff.* The Small Purple Barred.*West. and Hump.*, t. 54, f. 2; *Newman*, Brit. Moths, p. 469.

This pretty little species is generally distributed over the heathy parts of the entire county. It appears on the wing as early as May to July.

Section, GEOMETRÆ, *Linnaeus*.
Family, URAPTERYGIDÆ, *Guenée*.
GENUS, URAPTERYX, *Leach*.

SAMBUCARIA, *Linn.* The Swallow-tail Moth.*West. and Hump.*, t. 59, fgs. 29, 30; *Newman*, Brit. Moths, p. 50.

This beautiful insect is not uncommon on the sides of our woods and lanes in all parts of the county. It is met with at dusk in June and July.

Family, ENNOMIDÆ, *Guenée*.
GENUS, EPIONE, *Duponchel*.

APICIARIA, *Schiff.* The Bordered Beauty.*West. and Hump.*, t. 62, f. 3; *Newman*, Brit. Moths, p. 51.

This is not a common species with us, though generally distributed; taken by beating our thick hedges in lanes and sides of woods, in July, near Stonehouse Reservoir (Mr. H. S. Bishop), and Stoke Wood, Exeter.

ADVENARIA, *Bork.* The Little Thorn.*West. and Hump.*, t. 62, f. 6; *Newman*, Brit. Moths, p. 51.

Rare and local; taken on Haldon by Mr. J. Rowdon and myself.

GENUS, RUMIA, *Duponchel*.CRATÆGATA, *Linn.* The Brimstone Moth.*West. and Hump.*, t. 59, fgs. 26-28; *Newman*, Brit. Moths, p. 52.

Generally distributed, and very common. Appearing as early as April and in June.

GENUS, VENILIA, *Duponchel*.MACULATA, *Linn.* The Speckled Yellow.*West. and Hump.*, t. 2, f. 2; *Newman*, Brit. Moths, p. 52.

Common on all our heaths and open spaces near woods in June and July.

GENUS, **ANGERONA**, *Duponchel*.**PRUNARIA**, *Linn.* The Orange Moth.*West. and Hump.*, t. 59, fgs. 22-25; *Newman*, Brit. Moths, p. 52.

This beautiful moth is not common, but widely distributed. Our best locality for it in the Exeter district is the grass-field at the upper part of Stoke Wood. The insect flies at dusk by the side of the hedge parting the wood from the field. It appears in June. It is more frequent in the Plymouth district than the Exeter.

GENUS, **METROCAMPA**, *Latrielle*.**MARGARITARIA**, *Linn.* The Light Emerald.*West. and Hump.*, t. 59, f. 32; t. 60, f. 42; *Newman*, Brit. Moths, p. 53.

Generally distributed in our wooded districts. This delicately-tinted insect is very pleasing to the eye when fresh; but unfortunately the green is fugacious, and in a comparatively short time the insect becomes nearly white. It is met with in similar places to the last, at the end of June and through July.

GENUS, **ELLOPIA**, *Treitschke*.**FUSCIARIA**, *Linn.* The Barred Red.*West. and Hump.*, t. 59, f. 33; *Newman*, Brit. Moths, p. 53.

Not common, but widely scattered through our fir woods. In the Exeter district I have taken it at Red Hills and in Stoke Wood in July.

GENUS, **EURYMENE**, *Duponchel*.**DOLABRARIA**, *Linn.* The Scorched Wing.*West. and Hump.*, t. 72, fgs. 7, 8; *Newman*, Brit. Moths, p. 53.

Rare in the Exeter district. Taken in Caun Wood, Bickleigh (Mr. Bignell).

GENUS, **PERICALLIA**, *Stephens*.**SYRINGARIA**, *Linn.* The Lilac Beauty.*West. and Hump.*, t. 59, f. 21; t. 60, f. 29; *Newman*, Brit. Moths, p. 54.

This beautiful insect is not uncommon in some localities, but is not plentiful anywhere. It is met with in June in shrubberies and woods throughout the county. It is rare both at Dartmouth and Barnstaple.

GENUS, **SELENIA**, *Hübner*.**ILLUNARIA**, *Hüb.* The Early Thorn.*West. and Hump.*, t. 59, f. 13; *Newman*, Brit. Moths, p. 55.

Common everywhere, round the borders of woods, in April and July.

LUNARIA, Fab. The Lunar Thorn.*West. and Hump.*, t. 59, fgs. 15, 16; *Newman*, Brit. Moths, p. 55.

Captured at Compton, Saltram, and Bickleigh, by Mr. H. S. Bishop; and at Alphington by Mr. Rowdon.

ILLUSTRARIA, Hüb. The Purple Thorn.*West. and Hump.*, t. 59, f. 18; *Newman*, Brit. Moths, p. 55.

This beautiful insect has been taken at Bideford by Mr. J. C. Dale; at Compton, Saltram, and Bickleigh by Mr. H. S. Bishop; at Exeter by Mr. Rowdon; and at Dartmouth by Mr. G. T. Mathews. It appears on the wing in May and in August, being double-brooded.

GENUS, ODONTOPERA, Stephens.**BIDENTATA, Linn.** The Scalloped Hazel.*West. and Hump.*, t. 59, fgs. 5, 6; *Newman*, Brit. Moths, p. 56.

Generally distributed, and common in all our woods; appearing in May and June.

GENUS, CROCALLIS, Treitschke.**ELINGUARIA, Linn.** The Scalloped Oak.*West. and Hump.*, t. 59, fgs. 3, 4; *Newman*, Brit. Moths, p. 56.

Generally distributed in our oak woods; appearing in July and August.

GENUS, ENNOMOS, Treitschke.**TILIARIA, Bork.** The Canary-shouldered Thorn.*West. and Hump.*, t. 59, fgs. 7, 8; *Newman*, Brit. Moths, p. 57.

Rare; one specimen only has fallen to my lot in some twenty years' collecting in the Exeter district. It is taken at Plymouth. It appears on the wing in August. Mr. Rowdon took one at Exminster.

FUSCANTARIA, Haw. The Dusky Thorn.*West. and Hump.*, t. 59, f. 20; *Newman*, Brit. Moths, p. 57.

Widely distributed, but not common; has been taken at Plymouth, Teignmouth, Barnstaple, and the Exeter district. The moth appears on the wing in August and September.

EROSARIA, Schiff. The September Thorn.*West. and Hump.*, t. 59, fgs. 9, 10; *Newman*, Brit. Moths, p. 57.

Extremely rare. Taken once near Shaugh, by Mr. H. S. Bishop; on Haldon by Mr. Rowdon; and at Dartmouth by Mr. G. F. Mathews.

ANGULARIA, Schiff. The August Thorn.

West. and Hump., t. 59, fgs. 11, 12; *Newman*, Brit. Moths, p. 58.

Not common, but sparsely distributed over the entire county, more especially in the wooded districts and in thick hedgerows, in June. It comes freely to gas-lamps in the environs of Plymouth.

GENUS, **HIMERA**, *Duponchel*.

PENNARIA, Linn. The Feathered Thorn.

West. and Hump., t. 59, fgs. 1, 2; *Newman*, Brit. Moths, p. 58.

Sparsely distributed in the south, from Plymouth to Torquay and Exeter. The males and females are very different in colour, the former having a yellow ground colour to the anterior wings, the latter dull fuscous, and, when quite fresh, with a delicate rosy hue all over it. This moth is greatly attracted to light, and may be captured on gas-lamps occasionally in October. Mr. Bignell says it is common in Cann Wood.

Family, **AMPHIDASYDÆ**, *Guenée*.

GENUS, **PHIGALIA**, *Duponchel*.

PILOSARIA, Schiff. The Pale Brindled Beauty.

West. and Hump., t. 58, fgs. 1, 2; *Newman*, Brit. Moths, p. 59.

A widely-distributed species, and not uncommon in the Exeter district, in the woods, in March. The female being wingless, almost the only way of obtaining specimens is to rear them from the larvæ.

GENUS, **BISTON**, *Leach*.

HIRTARIUS, Linn. The Small Brindled Beauty.

West. and Hump., t. 59, fgs. 14, 15; *Newman*, Brit. Moths, p. 60.

Widely distributed through our woods; but not so common here as in the neighbourhood of London and elsewhere. It may be taken in March and April.

GENUS, **AMPHIDASYX**, *Stephens*.

PRODROMARIA, Schiff. The Oak Beauty.

West. and Hump., t. 58, fgs. 8, 9; *Newman*, Brit. Moths, p. 61.

This beautiful moth is not common, though widely distributed over the county, and appears in March and April.

BETULARIA, Linn. The Peppered Moth.

West. and Hump., t. 58, fgs. 11, 12; *Newman*, Brit. Moths, p. 61.

More common than the last; larvæ in all our oak woods. The perfect insect comes to light in May and June.

Family, BOARMIIDÆ, *Guenée*.
GENUS, **HEMEROPHILA**, *Stephens*.

ABRUPTARIA, *Thun.* The Waved Umber.

West. and Hump., t. 61, f. 1; *Newman*, Brit. Moths, p. 62.

Generally found sticking against boles of trees, or against walls, when it is rather difficult to distinguish it. It is not uncommon in the Exeter district, and appears on the wing in May and August. Very rare near Plymouth.

GENUS, **CLEORA**, *Curtis*.

VIDUARIA, *Schiff.* The Speckled Beauty.

West. and Hump., t. 60, f. 12; *Newman*, Brit. Moths, p. 62.

Taken at Clovelly and Lynton (Mr. G. F. Mathews). This moth is said by Newman to have been taken only in Sussex, and the New Forest, Hampshire. It appears on the wing in June.

GLABRARIA, *Hüb.* The Dotted Carpet.

West. and Hump., t. 60, f. 13 (*C. teneraria*); *Newman*, Brit. Moths, p. 63.

Very rare. One locality only, so far as I am aware, has been recorded for this insect in Devon, and that is Clovelly. It appears on the wing in July.

LICHENARIA, *Schiff.* The Brussels Lace.

West. and Hump., t. 60, fgs. 10, 11; *Newman*, Brit. Moths, p. 63.

A widely-distributed species; found about lichen-covered trees, walls, and rocks, and when settled on them is very difficult to discover. The insect appears in July. It is rare in the Plymouth district.

GENUS, **BORMIA**, *Treitschke*.

REPANDARIA, *Linn.* The Mottled Beauty.

West. and Hump., t. 60, fgs. 16, 18, 19, 20; *Newman*, Brit. Moths, p. 63.

Common everywhere, in woods and gardens; frequently comes into houses in June and July.

Var. **CONVERSARIA**, *Hüb.*

West. and Hump., t. 60, f. 20.

This very distinct variety is larger than the type, and the ground-colour of the wings is lighter. The broad dark fascia across both anterior and posterior wings gives to this insect a distinct and marked appearance. It must be regarded as rare with us. Mr. Bignell says: "I have many times bred the beautiful banded variety by feeding them on *Erica cinerea*."

RHOMBOIDARIA, Schiff. The Willow Beauty.*West. and Hump.*, t. 60, fgs. 25-27; *Newman*, Brit. Moths, p. 64.

A common and very variable species, found in gardens, on walls of houses, and on trunks of trees, adhering with outstretched wings, the colours of which correspond so much with those of bark and lichens that it is difficult to discover them. The insect flies in June.

ABIETARIA, Schiff. The Satin Carpet.*West. and Hump.*, t. 60, f. 21; *Newman*, Brit. Moths, p. 64.

Rare; and, so far as I am aware, only captured by Mr. D'Orville and by Mr. J. C. Dale, at High Bickington. It is to be sought for in July.

ROBORARIA, Schiff. The Great Oak Beauty.*West. and Hump.*, t. 60, fgs. 23, 24; *Newman*, Brit. Moths, p. 66.

This fine insect is very rare in Devonshire, but has been taken in Cann Woods, in June.

CINCTARIA, Schiff. The Ringed Carpet.*West. and Hump.*, t. 60, f. 14; *Newman*, Brit. Moths, p. 64.

Also rare, and has, I believe, been taken only by Mr. D'Orville. The moth flies in May and June.

GENUS, TEPHROSIA, Boisduval.**CONSONARIA, Hüb.** The Square Spot.*West. and Hump.*, t. 61, f. 26; *Newman*, Brit. Moths, p. 66.

Common in Cann and Bickleigh Woods in May and June. (Mr. Bignell.)

CREPUSCULARIA, Schiff. The Small Engrailed.*West. and Hump.*, t. 61, f. 3 (*T. abietaria*); *Newman*, Brit. Moths, p. 66.

Taken in the Plymouth and Exeter districts, and is met with on the wing in April and May.

BIUNDULARIA, Villers. The Engrailed.*West. and Hump.*, t. 61, fgs. 4, 5 (*T. crepuscularia*); *Newman*, Brit. Moths, p. 66.

Mr. Jenner Fust's list; and I have one specimen taken in the Exeter district. The moth flies in April and again in July.

EXTERSARIA, Hüb. The Brindle White-spot.*West. and Hump.*, t. 61, f. 6; *Newman*, Brit. Moths, p. 67.

Taken in Cann Quarry and Woods, Ivybridge, and Maristow, by Mr. H. S. Bishop.

PUNCTULARIA, Hüb. The Grey Birch.

West. and Hump., t. 61, figs. 7, 8; *Newman*, Brit. Moths, p. 67.

Taken in the Plymouth district, in Bickleigh Vale and Boringdon Wood, but it is scarce. It is met with in woods in May and June.

GENUS, **GNOPHOS**, *Treitschke*.

OBSCURATA, Schiff. The Annulet.

Newman, Brit. Moths, p. 68.

A very variable species in the ground-colour of the wings; and, taking the extremes of variations, they might easily be mistaken for distinct species; indeed when I first began to collect they were regarded as such. About twenty years ago, this moth was very abundant for one or two seasons on bramble blossoms, flying just at dusk; but since then I have not met with it in anything like abundance. It flies in July. It is generally distributed both on the north and south coast of the county.

Fam., GEOMETRIDÆ, *Guende*.

GENUS, **PSEUDOTERPNA**, *Hübner*.

CYTISARIA, Schiff. The Grass Emerald.

West. and Hump., t. 60, f. 6; *Newman*, Brit. Moths, p. 69.

This delicately-coloured moth is not uncommon, and widely distributed over the county. The green tint is very evanescent, and leaves the ground-colour of the wings a dull chalky white. The moth is found on the margin of woods, or where the common broom grows, on which the larvæ feed. It appears on the wing in July.

GENUS, **GEOMETRA**, *Leach*.

PAPILIONARIA, Linn. The Large Emerald.

West. and Hump., t. 60, figs. 1, 2; *Newman*, Brit. Moths, p. 70.

This beautiful insect is scarce with us, but scattered over the entire county. Several specimens were taken in one season at Topsham a few years ago. The larvæ, in addition to feeding on birch and some other forest trees, feed freely on broom, the same as the last. The perfect insect flies at dusk in July.

GENUS, **NEMOBIA**, *Hübner*.

VIRIDATA, Linn. The Small Grass Emerald.

Newman, Brit. Moths, p. 71.

Mr. Newman records this insect as taken in Devonshire. It appears on the wing in May.

GENUS, **IODES**, *Guenée*.

VERNARIA, *Haw.* The Small Emerald.

West. and Hump., t. 60, fgs. 3, 4; *Newman*, Brit. Moths, p. 71.

This has been added to the list of Devon Lepidoptera within the last few years. Taken in Stoke Wood, and appears on the wing in July.

LACTEARIA, *Haw.* The Little Emerald.

West. and Hump., t. 73, fgs. 9-17; *Newman*, Brit. Moths, p. 71.

Common everywhere in open places in woods; flying among long herbage, &c. in June.

GENUS, **PHORODESMA**, *Boisduval*.

BAJULARIA, *Schiff.* The Blotched Emerald.

West. and Hump., t. 60, fgs. 8, 9; *Newman*, Brit. Moths, p. 71.

This beautiful moth is not common, but is widely dispersed. It is taken in the mixed woods near Exeter, but more especially in the upper part of Stoke Wood, in June and July.

GENUS, **HEMITHEA**, *Stephens*.

THYMIARIA, *Linn.* The Common Emerald.

West. and Hump., t. 73, fgs. 15, 16; *Newman*, Brit. Moths, p. 72.

Common everywhere in woods and lanes where the hedges are large, and herbage plentiful. It appears on the wing in June.

Family, **EPHYRIDÆ**, *Guenée*.GENUS, **EPHYRA**, *Duponchel*.

PORARIA, *Linn.* The False Mocha.

West. and Hump., t. 61, f. 21; *Newman*, Brit. Moths, p. 72.

Not uncommon among low-growing oaks in several of the thick hedges in the Exeter district, and at Barnstaple and Dartmouth, in June.

PUNCTUARIA, *Linn.* The Maiden's Blush.

West. and Hump., t. 61, f. 5 (*Caterpillar*); *Newman*, Brit. Moths, p. 72.

Common at Bickleigh and Cann Woods, and in Stoke Wood in the Exeter district. It is double-brooded, appearing on the wing in May and September.

TRILINEARIA, *Bork.* The Clay Triple-lines.

West. and Hump., t. 61, f. 23; *Newman*, Brit. Moths, p. 73.

This has been taken by Mr. D'Orville; but is very rare. Captured at Bickleigh by Mr. Bignell, at Stoke by Mr. Rowdon, and at Barnstaple and Dartmouth by Mr. G. F. Mathews.

OMICRONARIA, *Schiff.* The Mocha.

West. and Hump., t. 61, f. 17; *Newman*, Brit. Moths, p. 73.

Common in thick hedges and lanes amongst oak all through the Exeter district in May and June. This was especially abundant in a lane leading from Polsloe Farm to Stoke Hill on the 9th June, 1856.

PENDULARIA, *Linn.* The Birch Mocha.

West. and Hump., t. 61, fgs. 18-25; *Newman*, Brit. Moths, p. 74.

Rare. Taken near Starcross by Mr. Powley.

Family, ACIDALIIDÆ, *Guenée*.

GENUS, *ASTHENA*, *Hübner*.

LUTEATA, *Schiff.* The Small Yellow Wave.

West. and Hump., t. 71, f. 27 (*E. luteata*); *Newman*, Brit. Moths, p. 74.

Generally distributed, and common in most localities in May and June.

CANDIDATA, *Schiff.* The Small White Wave.

West. and Hump., t. 71, f. 26; *Newman*, Brit. Moths, p. 76.

Common on the margins of woods all through the county in May and June.

SYLVATA, *Schiff.* The Waved Carpet.

West. and Hump., t. 71, f. 24; *Newman*, Brit. Moths, p. 75.

Taken at High Bickington by Mr. Dale; Barnstaple and Dartmouth by Mr. G. F. Mathews; Bickleigh Vale and Plymbridge by Mr. Bignell; and in the furze-brake in Stoke Wood, Exeter, by Rev. J. Hellins.

BLOMERARIA, *Curtis.* Blomer's Rivulet.

West. and Hump., t. 71, f. 25; *Newman*, Brit. Moths, p. 75.

This very distinct species has been captured at Teignmouth. I give this on the authority of the late Mr. J. C. Dale, who furnished me with the note. The moth appears on the wing in June.

GENUS, *EUPISTERIA*, *Boisduval*.

HEPARATA, *Schiff.* The Dingy Shell.

West. and Hump., t. 71, f. 28; *Newman*, Brit. Moths, p. 75.

Not rare. Taken at Yealm Bridge by Mr. H. S. Bishop, and at Barnstaple and Dartmouth by Mr. G. F. Mathews. It appears on the wing in June.

GENUS, *VENUSIA*, *Curtis*.

CAMBRICARIA, *Curtis.* The Welsh Wave.

West. and Hump., t. 63, f. 15; *Newman*, Brit. Moths, p. 76.

Captured in Stoke Wood by Mr. J. Rowdon.

GENUS, *ACIDALIA*, *Boisduval*.SCUTULATA, *Schiff*. The Single-dotted Wave.*West. and Hump.*, t. 72, f. 6 (*P. lividata*); *Newman*, Brit. Moths., p. 76.

Generally but sparsely distributed. Taken by beating thick hedges and the margins of woods, in June. Stoke Wood, Exeter.

BISETATA, *Huf*. The Small Fan-foot Wave.*West. and Hump.*, t. 72, f. 4 (*P. dilutaria*); *Newman*, Brit. Moths, p. 77.

Not uncommon in our thick hedges, and generally distributed; appearing on the wing in June. Very common in Camel Wood.

TRIGEMINATA, *Haw*. The Treble Brown-spot.*West. and Hump.*, t. 72, f. 7 (bad); *Newman*, Brit. Moths, p. 77 (good).

Common, and generally distributed in our lanes and wood-sides, in June and July.

RUSTICATA, *Schiff*. The Least Carpet.*West. and Hump.*, t. 71, f. 22; *Newman*, Brit. Moths, p. 77.

Very rare. One specimen only has been taken, that I am aware of, in the Exeter district. It has been taken by Mr. H. S. Bishop, on the Eastern Cliff, Rame Head.

OSSEATA, *Schiff*. The Dark Cream Wave.*West. and Hump.*, t. 73, f. 1; *Wood*, Index, p. 723; *Newman*, Brit. Moths, p. 78 (*A. interjectaria*).

Generally distributed in woods and thick hedges throughout the county in June and July.

HOLOSERICATA, *Dupon*. The Silky Wave.*Newman*, Brit. Moths, p. 78.

Very rare; captured in Stoke Wood by Mr. Rowdon.

INCANARIA, *Hüb*. The Small Dusky Wave.*West. and Hump.*, t. 73, f. 3 (*A. virgularia*); *Newman*, Brit. Moths, p. 78.

Common everywhere, in June and July.

PROMUTATA, *Guenée*. The Mullen Wave.*West. and Hump.*, t. 72, f. 10 (*P. incanata*); *Newman*, Brit. Moths, p. 79.

Taken in Devon by Dr. Leach. Mr. Bignell informs me that it is common on the coast at Bovisand and Wembury.

SUBSERICEATA, *Haw*. The Satin Wave.*West. and Hump.*, t. 73, f. 4; *Newman*, Brit. Moths, p. 80.

Rare; but has been captured by Mr. D'Orville.

PINGUEDINATA, *Zeller*. MANCUNIATA, *Knaggs*.

Ent. Ann., 1866, f. 1, p. 144.

The species compared with its nearest relation *Subsericeata*, requires close comparison. Mr. G. F. Mathews writes me: "This occurred commonly in one locality near Dartmouth, in June, 1875; but the two following years only one or two examples were seen." For correction of synonyms, see *Ent. Ann.*, 1870, pp. 134, 135.

IMMUTATA, *Fab.* The Lesser Cream Wave.

West. and Hump., t. 72, f. 12; *Newman*, *Brit. Moths*, p. 80.

This has been taken in the county, at Cann Wood, where it is said to be common, but not in the Exeter district. It appears on the wing in June.

REMUTATA, *Linn.* The Cream Wave.

West. and Hump., t. 73, fgs. 9, 10; *Newman*, *Brit. Moths*, p. 80.

Common, among nettles and coarse herbage, all through the county, in May and June.

COMMUTATA, *Guenée*. The Changed Wave.

Newman, *Brit. Moths*, p. 81 (*A. fumata*).

Captured by Mr. Rowdon at Torquay.

IMITARIA, *Hüb.* The Small Blood-vein.

West. and Hump., t. 73, f. 18; *Newman*, *Brit. Moths*, p. 82.

Tolerably common, amongst rough herbage and borders of woods, in July and August.

AVERSATA, *Linn.* The Riband Wave.

West. and Hump., t. 73, f. 6; *Newman*, *Brit. Moths*, p. 82.

A very common and variable species. Mr. Newman's figures are very good, representing in the lower figure the type, and the upper figure an extreme variety, with the dark band filling up the space between the costal and lateral lines. Found in every hedge and wood, in July and August.

INORNATA, *Haw.* The Plain Wave.

West. and Hump., t. 73, f. 7; *Newman*, *Brit. Moths*, p. 83.

Taken by Mr. Rowdon in Stoke Wood, in June.

EMARGINATA, *Linn.* The Small Scallop.

West. and Hump., t. 73, f. 26; *Newman*, *Brit. Moths*, p. 84.

Not common in the Exeter district. I took it in the Exwick fields, July 25th, 1856. Mr. Bignell took it at Shaldon.

GENUS, **TEMANDRA**, *Duponchel*.AMATARIA, *Linn.* The Blood-vein.*West. and Hump.*, t. 62, f. 1; *Newman*, Brit. Moths, p. 84.

This beautiful moth is widely distributed, but not common. The caterpillar feeds on dock leaves, and other low-growing plants of the same natural order. The moth appears in July and August.

Family, CABERIDÆ, *Guenée*.GENUS, **CABERA**, *Treitschke*.PUSARIA, *Linn.* The Common White Wave.*West. and Hump.*, t. 61, fgs. 13, 14; *Newman*, Brit. Moths, p. 84.

Common everywhere amongst coarse herbage in damp hedges in June and July.

ROTUNDARIA, *Haw.* The Round-winged White Wave.*West. and Hump.*, t. 61, f. 15; *Newman*, Brit. Moths, p. 85.

A rare species with us, but has been taken in the Exeter district by Mr. D'Orville. It appears on the wing in May.

XANTHEMARIA, *Scop.* The Common Wave.*West. and Hump.*, t. 61, f. 16; *Newman*, Brit. Moths, p. 85.

Common everywhere, amongst nettles and rough herbage, from June to September.

GENUS, **CORYCIA**, *Duponchel*.TEMERATA, *Schiff.* The Clouded Silver.*West. and Hump.*, t. 71, fgs. 8, 9; *Newman*, Brit. Moths, p. 86.

This beautiful insect is rather scarce, but at the same time widely dispersed. It appears on the wing in May.

TAMINATA, *Schiff.* The White Pinion-spotted.*West. and Hump.*, t. 71, f. 7; *Newman*, Brit. Moths, p. 86.

Rare. Only one specimen has fallen to my lot in a great many years' collecting. The moth appears on the wing in May and June. Mr. Bishop has taken it at the eastern end of Chelson Meadow, Plymouth.

GENUS, **ALEUCIS**.PICTARIA, *Guenée*. The Grey Carpet.*West. and Hump.*, t. 60, f. 15; *Newman*, Brit. Moths, p. 86.

Captured by Mr. Rowdon in Stoke Wood. The moth appears in April, when the black-thorn is in blossom.

Family, *MACARIIDÆ*, *Guenée*.

GENUS, *MACARIA*, *Curtis*.

ALTERNATA, *Schiff*. The Sharp-angled Peacock.

West. and Hump., t. 73, f. 23; *Newman*, *Brit. Moths*, p. 87.

Very scarce in the Exeter district, but not rare in the Plymouth, on the road to Shaugh from Plympton (Mr. H. S. Bishop). Mr. Norcombe and myself have taken it in the neighbourhood of Exeter. The larvæ feed on willow and black-thorn, and the moth appears in July and August. Mr. Norcombe bred this species in 1858. The larva is green and glossy, head and anterior legs with a purple stain, two or three purplish blotches on the fifth and sixth segments, and in some extending the whole length of the body. Before going into the pupa state it changes to a reddish-brown. The larvæ were full-fed by the 1st of July.

NOTATA, *Linn*. The Peacock.

West. and Hump., t. 73, fgs. 21, 22; *Newman*, *Brit. Moths*, p. 87.

Also scarce. It has been captured at Plymouth, Compton, Bickleigh, and in the Exeter district, in the month of June.

LITURATA, *Linn*. The Tawny-barred Angle.

West. and Hump., t. 73, fgs. 24, 25; *Newman*, *Brit. Moths*, p. 88.

This is also rare, but not so scarce as the two former ones. It appears on the wing in July. Mr. Bignell informs me that this is common at Cann Wood, but very local.

GENUS, *HALIA*, *Duponchel*.

VAURIA, *Dup*. The V. Moth.

West. and Hump., t. 61, fgs. 9, 10; *Newman*, *Brit. Moths*, p. 88.

Generally distributed, but not common; found mostly amongst rank herbage on wood sides in July.

Family, *AVENTIIDÆ*, *Guenée*.

GENUS, *AVENTIA*, *Duponchel*.

FLEXULA, *Fab*. The Beautiful Hook-tip.

West. and Hump., t. 73, f. 27; *Newman*, *Brit. Moths*, p. 55.

Rare. I have one specimen I captured in Stoke Wood, near Exeter, in July.

Family, *FIDONIIDÆ*, *Guenée*.

GENUS, *STRENIA*, *Duponchel*.

CLATHRATA, *Linn*. The Latticed Heath.

West. and Hump., t. 72, f. 1; *Newman*, *Brit. Moths*, p. 89.

Very scarce; has been taken occasionally on the borders of Dartmoor. It is met with in May and June.

GENUS, **PANAGRA**, *Guendé*.

PETRARIA, *Espr.* The Brown Silver-line.

West. and Hump., t. 66, f. 14; *Newman*, Brit. Moths, p. 90.

This pretty moth is not uncommon on the margins of woods amongst the common bracken, on which the larvæ feed. It is common on Homerdown and in Brixton Brake. The moth appears in June, and is generally distributed.

GENUS, **NUMERIA**, *Duponchel*.

PULVERARIA, *Linn.* The Barred UMBER.

West. and Hump., t. 61, fgs. 11, 12; *Newman*, Brit. Moths, p. 90.

Not uncommon in some seasons at Fordlands and Stoke Wood, near Exeter, amongst bracken and rough herbage; on Wattles Down, near Whitstone; Bickleigh Bridge and Bovisand, in the Plymouth district. Rare at Dartmouth. Mr. Mathews says: "I have never seen this supposed-to-be-common insect in North Devon." Appears in May and June.

GENUS, **FIDONIA**, *Treitschke*.

ATOMARIA, *Linn.* The Common Heath.

West. and Hump., t. 57, f. 8; *Newman*, Brit. Moths, p. 92.

Common on Haldon, Woodbury Common, and most of our heaths, in June and July.

PINARIA, *Linn.* The Bordered White.

West. and Hump., t. 57, f. 6; *Newman*, Brit. Moths, p. 92.

Scarce; has been taken in a fir wood on Redhills, near Exeter, and in Stoke Wood. The moth appears on the wing in April and May.

CONSPICUATA, *Schiff.* The Frosted Yellow.

West. and Hump., t. 57, fgs. 4, 5; *Newman*, Brit. Moths, p. 93.

Rare; one captured near Bickleigh by Mr. Dawe.

GENUS, **STERRHA**, *Hübner*.

SACRARIA, *Linn.* The Vestal.

Newman, Brit. Moths, p. 96.

This beautiful and delicately-coloured moth was, I believe, added to the British list by Mr. Terry, of Torquay, who took specimens at Babbicombe, which capture is recorded in the *Entomologist's Magazine*, 1867, p. 131. A specimen has also been captured at Exmouth, and several at Plymouth, Devonport, Mount Batten, and one specimen near Barnstaple. Mr. D'Orville took one in his garden at Alphington, at "sugar," September 5th, 1865.

GENUS, **ASPILATES**, *Treitschke*.**STRIGILLARIA**, *Hüb.* The Grass Wave.

West. and Hump., t. 62, fgs. 13, 14 (*A. respersaria*); *Newman*, Brit. Moths, p. 97.

This is not a common species with us, but specimens may be taken occasionally on Haldon. It is beaten or brushed out of the heath in July.

CITRARIA, *Hüb.* The Yellow Belle.

West. and Hump., t. 62, f. 9; *Newman*, Brit. Moths, p. 97.

Taken on Dawlish Warren, and on the railway banks near there. It has also been captured at Plymouth, Whitsand Bay, and Yealm Point, in May and in August.

GILVARIA, *Schiff.* The Straw Belle.

West. and Hump., t. 62, f. 11; *Newman*, Brit. Moths, p. 98.

Taken in dry heathy places, but not common, in August.

Family, **ZERENIDÆ**, *Guenée*.GENUS, **ABRAXAS**, *Leach*.**GROSSULARIATA**, *Linn.* The Currant, or Large Magpie.

West. and Hump., t. 65, fgs. 4-6 (new vars.); *Newman*, Brit. Moths, pp. 98-100.

Very common and very destructive in the larvæ state some seasons in gardens, but not so destructive to the gooseberry and currant-bushes as the larvæ of the saw-fly, which in some seasons entirely defoliate large tracts, of gooseberry-bushes more especially. Some varieties of this moth are very beautiful and distinct, so much so as to be scarcely recognized as belonging to the same species. The moth appears in July and August.

ULMATA, *Fab.* The Scarce Magpie.

West. and Hump., t. 65, f. 3; *Newman*, Brit. Moths, p. 100.

This insect, which is figured both by Stephens (vol. iii, *Haustellata*, p. 32, f. 1, and by *West. and Hump.*, t. 65, f. 3, is said by Mr. Haworth, on the authority of Mr. Francillon, to have been taken in Devonshire.

GENUS, **LIGDIA**, *Guenée*.**ADUSTATA**, *Schiff.* The Scorched Carpet.

West. and Hump., t. 65, f. 15; *Newman*, Brit. Moths, p. 101.

This very pretty moth is not uncommon, and generally distributed. Found on the margins of woods and in gardens in June.

GENUS, *LOMASPILIS*, *Hübner*.*MARGINATA*, *Linn.* The Clouded Border.*West. and Hump.*, t. 73, fgs. 11, 12; *Newman*, Brit. Moths, p. 101.

Common, and generally distributed. Found amongst nettles and rough herbage in May to August. It is liable to great variation in colour and markings.

Family, *LIGIIDÆ*, *Guenée*.

The only insect belonging to this family has not yet been discovered in Devon; but I see no reason why it should not be found on the eastern border of the county.

Family, *HYBERNIIDÆ*, *Guenée*.GENUS, *HYBERNIA*, *Latreille*.*RUPICAPRARIA*, *Schiff.* The Early or Winter Moth.*West. and Hump.*, t. 68, f. 11; *Newman*, Brit. Moths, p. 102

Common everywhere in orchards and gardens. The males may be captured freely on gas-lamps all through the winter months.

LEUCOPHÆARIA, *Schiff.* The Spring Usher.*West. and Hump.*, t. 57, fgs. 16, 17; *Newman*, Brit. Moths, p. 103.

Widely distributed in our oak woods; but not common in the Exeter district, though plentiful in the Plymouth. The males fly by day, flitting about among the branches of trees, in February and March; the females may be found sitting on the boles of oaks near the ground.

AURANTIARIA, *Hüb.* The Scarce Umber.*West. and Hump.*, t. 57, fgs. 23, 24 (*H. prosapiaria*); *Newman*, Brit. Moths, p. 103.

A very uncommon species in the Exeter district; but common, as I am informed by Mr. Bignell, at Shaugh, Bickleigh, and Cann. Was taken many years ago by Mr. E. Norcombe in Stoke Wood, near Exeter. The moth flies in October and November.

PROGEMMARIA, *Hüb.* The Dotted Border.*West. and Hump.*, t. 57, f. 20 (*H. carpeolaria*); *Newman*, Brit. Moths, p. 104.

Generally distributed in woods and gardens; appearing in February and March. The females should be looked for on the boles of large oaks. It is a common species.

DEFOLIARIA, *Linn.* The Mottled Umber.*West. and Hump.*, t. 57, fgs. 25-29; *Newman*, Brit. Moths, p. 104.

This beautiful moth is liable to considerable variation in the colour of the wings. The female is perfectly apterous;

but the body and legs are highly adorned with colour, and when sitting amongst the lichens on the boles of oaks it is very difficult to discover. The males appear on the wing in October. It is common.

GENUS, **ANISOPTERYX**, *Stephens*.

ÆSCULARIA, *Schiff.* The March Moth.

West. and Hump., t. 57, f. 18; *Newman*, Brit. Moths, p. 105.

Generally distributed in our woods and gardens, and comes to gas-lights, in April. It is not so frequent in the Exeter district as in the Plymouth.

Family, **LARENTIIDÆ**, *Guenée*.

GENUS, **CHEIMATOBIA**, *Stephens*.

BRUMATA, *Linn.* The Winter Moth.

West. and Hump., t. 68, f. 10; *Newman*, Brit. Moths, p. 106.

Much too common in gardens and orchards, the larvæ completely destroying the crops in some seasons. The males are to be seen on most gas-lamps all through the winter months in a mild season; the females are nearly apterous, and are to be met with on the stems of apple-trees in our gardens, &c.

GENUS, **OPORABIA**, *Stephens*.

DILUTATA, *Schiff.* The November Moth.

West. and Hump., t. 68, figs. 7, 8; *Newman*, Brit. Moths, p. 108.

This is a most variable species as regards the colour and markings, and the size or expanse of wings. Some specimens are almost destitute of lines or markings, others again are distinctly marked. The ground-colour also varies from a light grey through several shades to brown. The moth is tolerably plentiful, in October and November, in woods and lanes in the Exeter district; it is also common at Plymbridge.

FILIGRAMMARIA, *Her. Sch.* The Polar Carpet.

West. and Hump., t. 68, f. 9 (*L. polata*); *Newman*, Brit. Moths, p. 109.

This is said to have been taken in the Plymouth district. (See Stainton's *Manual*, vol. ii. p. 77.) This requires confirmation.

GENUS, **LARENTIA**, *Treitschke*.

DIDYMATA, *Linn.* The Twin-spot Carpet.

West. and Hump., t. 63, f. 1; *Newman*, Brit. Moths, p. 109.

Generally distributed in lanes and margins of woods amongst rough herbage in June.

MULTISTRIGARIA, Haw. The Mottled Grey.*West. and Hump.*, t. 62, f. 19; *Newman*, Brit. Moths, p. 110.

This moth is not generally abundant with us; but on March 8th, 1872, the ground round some willow bushes near Stokeham Quarry, Exeter, was literally covered with the wings of this insect, the bodies having been devoured by bats. It is common in Bladderly Lane, near Plymouth, and at Instow in the north.

OLIVATA, Schiff. The Beech-green Carpet.*West. and Hump.*, t. 63, f. 10; *Newman*, Brit. Moths, p. 112.

Beat out of oaks in hedges near Ide; not uncommon. Taken also at Plymouth; rather plentiful in July.

PECTINITARIA, Fue. The Green Carpet.*West. and Hump.*, t. 63, f. 9; *Newman*, Brit. Moths, p. 112.

This delicately-tinted moth is widely distributed in our copses and thickly-wooded hedges in June and July.

GENUS, **EMMELESIA**, *Stephens*.**AFFINITATA, Steph.** The Rivulet.*West. and Hump.*, t. 71, f. 13; *Newman*, Brit. Moths, p. 113.

By no means a common insect, but in some seasons several may perhaps fall to your lot, and then years may elapse before you meet with the like again. Found among rough herbage on wood sides, &c., in June. In the Plymouth district it is taken at Bickleigh, Radford, and Plymbridge.

ALCHEMILLATA, Haw. The Small Rivulet.*West. and Hump.*, t. 71, f. 15 (*E. rivulata*); *Newman*, Brit. Moths, p. 113.

This is rare with us, and is to be searched for in similar places to the former, and at the same time.

DECOLORATA, Hüb. The Sandy Carpet.*West. and Hump.*, t. 71, f. 12; *Newman*, Brit. Moths, p. 114.

Common in woods and lanes amongst thick herbage in June; generally distributed. The caterpillar feeds in the seed-vessels of the *Lychnis*.

ALBULATA, Schiff. The Grass Rivulet.*West. and Hump.*, t. 71, f. 18; *Newman*, Brit. Moths, p. 114.

Rare in the Exeter district, but common at Ivybridge. Has been taken by Mr. D'Orville, and also bred by him. The larvæ feed on the yellow rattle (*Rhinanthus Crista-Galli*). The moth flies from May to August in pastures where the food of the larvæ grows.

UNIFASCIATA, *Haw.* The Single-barred Rivulet.

West. and Hump., t. 71, figs. 20, 21; *Newman*, Brit. Moths, p. 116.

Captured in the north of Devon, by the Rev. E. Horton, in the early part of June. *Ent. Ann.*, 1865, p. 113.

GENUS, *EUPITHECIA*, *Curtis*.VENOSATA, *Fab.* The Netted Pug.

West. and Hump., t. 70, f. 20; *Newman*, Brit. Moths, p. 118.

Not common, but taken occasionally in the Exeter district.

Common in the larva state at Plymouth, on the railway embankments, and on the coast (Mr. Bignell). The larvæ feed on the seed-vessels of the bladder campion, *Silenea inflata*. The moth appears on the wing in June.

LINARIATA, *Schiff.* The Beautiful Pug.

West. and Hump., t. 69, figs. 1, 2; *Newman*, Brit. Moths, p. 119.

Plentiful in some seasons in the larva state. It feeds on the seed-vessels of the common yellow toad-flax (*Linaria vulgaris*). I have found this more abundantly near Sandy Gate, on the road to St. George's Clist, than anywhere else. Rare in the Plymouth district.

PULCHELLATA, *Steph.* The Foxglove Pug.

West. and Hump., t. 69, f. 3; *Newman*, Brit. Moths, p. 119.

Not common in this district, but Mr. Bignell informs me that it is common in the Plymouth district, where the foxglove grows. The larvæ feed on the seed-vessels of the common foxglove (*Digitalis purpurea*). The moth appears on the wing in May and June, and has been taken at Dunsford and Exeter. Dartmouth and Instow, common.

CENTAUREATA, *Schiff.* The Lime Speck.

West. and Hump., t. 70, f. 16; *Newman*, Brit. Moths, p. 120.

This pretty little species is not uncommon in the Exeter district. It is taken at Plymouth in July in gardens. The larvæ feed on clematis flowers.

SUCCENTAURIATA, *Linn.* The Bordered Lime Speck.

West. and Hump., t. 70, f. 14.

A most variable species; but perhaps the extreme of variation is reached in the variety named *Subfulvata* by Haworth. Both the species and varieties are not uncommon in the Exeter district in August. The larvæ feed on the seeds and leaves of yarrow (*Achillea millefolium*) and mugwort (*Artemisia vulgaris*).

SUBUMBRATA, *Hüb.* The Shaded Pug.

West. and Hump., t. 70, f. 15 (*E. piperata*); *Newman*, Brit. Moths, p. 122.

A scarce species. I have two specimens, taken in Stoke Wood, near Exeter, in June, 1862.

PLUMBEOLATA, *Haw.* The Lead-coloured Pug.

West. and Hump., t. 70, f. 11; *Newman*, Brit. Moths, p. 123.

Scarce; taken by Mr. D'Orville, at Dunsford and in the Exeter district, in May. The larvæ feed on cow-wheat (*Melampyrum pratense*), which grows abundantly in our meadows.

ISOGRAMMATA, *Trei.* }
 HAWORTHIATA, *Dbl.* } Haworth's Pug.

Newman, Brit. Moths, p. 123.

This little species was taken by Mr. D'Orville in 1870. The larvæ feed on the traveller's joy, or old man's beard (*Clematis vitalba*); the moth should therefore be sought for where this plant grows, and that is on nearly all calcareous soils. Plentiful at Newton, Torquay, &c. The moth appears on the wing in June.

VALERIANATA, *Hüb.* }
 VIMINATA, *Dbl.* } The Valerian Pug.

Newman, Brit. Moths, p. 129 (description only).

This rare moth has been taken by Mr. D'Orville. The larvæ is said by Mr. Crewe to feed on the flowers and seeds of the common valerian (*Valeriana officinalis*). The moth appears in May.

CASTIGATA, *Hüb.* The Grey Pug.

West. and Hump., t. 69, f. 13 (*E. nebulata*); *Newman*, Brit. Moths, p. 127.

Taken in Stoke Wood, August 4th, 1856. Westwood and Humphreys say June is the month this insect is met with on the wing; Mr. Newman says May; and I have taken it as above in August. There are probably two broods of this in the season. (?) Common at Shaugh, Bickleigh, &c. (Mr. H. S. Bishop).

PIMPINELLATA, *Bdv.* }
 VIRGAUREATA, *Dbl.* } The Golden Rod Pug.

Newman, Brit. Moths, p. 127.

This is one of the most generally distributed and most frequent species; found in open places in woods. The larvæ feed on the golden rod (*Solidago virgaurea*), an

abundant plant on the Devonian and carboniferous formations. The perfect insect may be taken on the wing in July and August.

ALBIPUNCTATA, Haw. The White-spotted Pug.

West. and Hump., t. 69, f. 14; *Newman*, Brit. Moths, p. 129 (description only)

This pretty little moth has been taken by Mr. D'Orville, and is common in Bickleigh Vale, Plymbridge, Clifton, &c. (Mr. H. S. Bishop.) The larvæ feed on the blossoms of the wild angelica (*Angelica sylvestris*) and hog weed (*Heracleum sphondylium*). The moth appears on the wing in May.

PUSILLATA, Hüb. The Dwarf Pug.

West. and Hump., t. 70, f. 7; *Newman*, Brit. Moths (description only), p. 130.

I have taken this in lanes in the Exeter district, and it occurs in other parts of the county; but it is not common. The larvæ feed on the spruce fir (*Pinus abies*). The moth flies in May.

IRRIGUATA, Hüb. The Marbled Pug.

West. and Hump., t. 69, f. 18; *Newman*, Brit. Moths, p. 131.

Captured by the Rev. J. Hellins. The moth appears on the wing in April and June. It is rare in the Plymouth district; taken in Boringdon Wood by Mr. H. S. Bishop.

PIMPINELLATA, Bdv. } The Pimpernel Pugs.
DENOTATA, Bdv. }

Newman, Brit. Moths, p. 131 (description only).

This, from the abundance of the food-plant in Devon, ought to be common; but my experience goes in the contrary direction. The moth appears on the wing in April and August. The larvæ feed on the flowers and seeds of the Burnet saxifrage (*Pimpinello saxifraga*), which is common in pastures.

FRAXINATA, Crewe. } The Ash-tree Pug.
INNOTATA, Hüb. }

West. and Hump., t. 70, f. 2; *Newman*, Brit. Moths, p. 131 (description only).

This has been taken by Mr. D'Orville. It appears to be rare with us. The moth appears on the wing in June and July. The larvæ feed on the ash (*Fraxinus excelsior*).

INDIGATA, *Hüb.* The Ochreous Pug.

Newman, Brit. Moths, p. 132 (description only).

I have a specimen of this captured in 1856. The larvæ are said to feed on fir and juniper. The moth appears on the wing in May and August.

NANATA, *Hüb.* The Narrow-winged Pug.

West. and Hump., t. 70, f. 10; *Newman*, Brit. Moths, p. 133 (description only).

Taken at Homerdown and Brixton Brake (Mr. Bignell). The larvæ feed on heath (*Calluna vulgaris*), and the moth appears in May.

SUBNOTATA, *Hüb.* The Plain Pug.

West. and Hump., t. 70, f. 6 (*L. simplicata*); *Newman*, Brit. Moths, p. 134.

The larvæ feed on the various species of goose-foot (*Chenopodium* and *Atriplex*), and the moth appears in June and July.

VULGATA, *Haw.* The Common Pug.

West. and Hump., t. 69, f. 17; *Newman*, Brit. Moths, p. 135 (description only).

Common, and generally distributed in the Exeter district. Mr. Bignell informs me that it is rare in the Plymouth neighbourhood. The larvæ feed on the white-thorn, and the moth appears in May and June.

EXPALLIDATA, *Gue.* The Bleached Pug.

Newman, Brit. Moths, p. 135.

This very distinct species I bred in 1862. The larvæ feed on the flowers of the golden rod, and the moth appears in July and August.

ABSINTHIATA, *Linn.* The Wormwood Pug.

West. and Hump., t. 70, f. 8; *Newman*, Brit. Moths, p. 136 (description only).

Not uncommon, and apparently generally distributed. The larvæ feed on the flowers of several of the *Compositæ*, such as *Senecio jacobæa*, and *Artemisia vulgaris*, the common wormwood; and the moth appears on the wing in June and July.

MINUTATA, *Schiff.* The Ling Pug.

Newman, Brit. Moths, p. 137 (description only).

Mr. D'Orville has captured this species; but it would seem to be rare. The larvæ feed on the common ling (*Calluna vulgaris*), and the moth appears on the wing in June.

ASSIMILATA, *Dbl.* The Currant Pug.

West. and Hump., t. 70, f. 4; *Newman*, Brit. Moths, p. 138 (description only).

Mr. D'Orville bred this species from larvæ obtained in his garden at Alphington, specimens of which he kindly presented me. The larvæ feed on the black currant, and the moth appears in May and August. The moth is common in the Plymouth district.

TRISIGNATA, *H. S.* The Triple-spot Pug.

Newman, Brit. Moths, p. 130.

Common in the larva state in Bickleigh Vale (Mr. Bignell).

DODONEATA, *Gue.* The Oak-tree Pug.

Newman, Brit. Moths, pp. 139-40 (description only); *West. and Hump.*, t. 69, f. 15 (? *E. subumbata*).

This species is rare with us. Mr. Bishop has taken it in Boringdon Wood.

ABBREVIATA, *Steph.* The Brindled Pug.

West. and Hump., t. 69, f. 12; *Newman*, Brit. Moths, p. 140.

A very generally-distributed species. The larvæ feed on the oak, out of which the moth may be beaten in April and May.

EXIGUATA, *Hüb.* The Mottled Pug.

West. and Hump., t. 69, f. 11; *Newman*, Brit. Moths, p. 141.

This is a widely-distributed and, it may be said, a common species at Exeter; but becomes rare as we proceed westward. Two localities only are given for it in the Plymouth district; viz., Ivybridge and Maker (Mr. Bignell). The larvæ feed on several trees and shrubs, such as whitethorn, willow, &c.; and the moth appears on the wing in May and June.

PUMILATA, *Hüb.* The Double-striped Pug.

West. and Hump., t. 69, f. 8 (*E. strobilata*); *Newman*, Brit. Moths, p. 143 (description only).

Somewhat generally distributed; but not common. Lee Moor tramway and Ivybridge are the localities for the Plymouth district. The caterpillar feeds both on the flowers of *Anthriscus sylvestris* and clematis flowers. The perfect insect appears on the wing in April and May, and again in August.

CORONATA, *Hüb.* The V. Pug.

West. and Hump., t. 69, f. 7; *Newman*, Brit. Moths, p. 143.

By no means a common species. Only one locality is recorded for it in the Plymouth district; namely, Plymbridge (Mr. Bignell). Taken at Lynton by Mr. Longstaff. The larvæ feed on several of the umbelliferous flowers, as also on the flowers of *Clematis vitalba*. This appears to be its favourite food; but Mr. G. F. Mathews tells me that he has bred it from larvæ feeding on holly blossoms. The moth should be plentiful in the district where this plant grows, if abundance of food is any criterion. But, generally speaking, I have found this the reverse; a single plant, or at least two or three, seems to attract the parent insects in preference to many.

RECTANGULATA, *Linn.* The Green Pug.

West. and Hump., t. 69, f. 4; *Newman*, Brit. Moths, p. 144 (description only).

Generally distributed in gardens and orchards. The larvæ feed on the flowers of the apple and crab, and the moth appears on the wing in June and July.

DEBILITATA, *Hüb.* The Little, or Bilberry Pug.

West. and Hump., t. 69, f. 5 (*E. nigro-punctata*); *Newman*, Brit. Moths, p. 145 (description only).

First taken at Dr. Leach's place, Spitchwick. It is by no means a common species. It should be looked for on heaths and in woods, where the food-plant grows, the whortleberry (*Vaccinium myrtillus*). Mr. D'Orville has taken it at Dunsford, where I have taken it myself in July. This moth has no pretensions to beauty, but has, as remarked by Mr. Newman, the appearance of having "faded, or been washed out." It might easily be mistaken for a faded *Coronata*. It is rare in the Plymouth district, and one locality only is recorded; viz., Plymbridge.

GENUS, LOBOPHORA, *Curtis*.SEXALATA, *Bork.* The Small Seraphim.

West. and Hump., t. 68, fgs. 19, 20; *Newman*, Brit. Moths, p. 146.

Taken near Exeter, but is rare. It appears on the wing in May and June.

HEXAPTERATA, *Schiff.* The Seraphim.

West. and Hump., t. 68, f. 18; *Newman*, Brit. Moths, p. 147.

Exeter district; scarce. The caterpillar feeds on aspen, and the moth may be taken in June.

LOBULATA, Hüb. The Early Tooth-striped.*West. and Hump.*, t. 68, fgs. 14, 15; *Newman*, Brit. Moths, p. 148.

Taken on sallow blossoms in March and April; not very common.

VIRETATA, Hüb. The Yellow-barred Brindle.*West. and Hump.*, t. 68 (description only); *Newman*, Brit. Moths, p. 147.

Taken in the neighbourhood of Exeter by Mr. D'Orville.

It appears on the wing in May and June, but is rare.

Captured at Cann Wood, Clifton, and the Hoe, Plymouth.

Mr. G. F. Mathews kindly informs me that he has bred this from larvæ found feeding on the flowers of the sycamore, and found both at Barnstaple and Dartmouth.

GENUS, THERA, Stephens.**SIMULATA, Hüb.** The Chestnut-coloured Carpet.*West. and Hump.*, t. 68, f. 5 (*P. coniferata*); *Newman*, Brit. Moths, p. 150.

I have taken this in a pine wood on Redhills, near Exeter; but it is scarce.

VARIATA, Schiff. The Grey Carpet.*West. and Hump.*, t. 68, f. 2; *Newman*, Brit. Moths.

Rare; captured on Redhills amongst firs; but very rare in June.

FIRMATA, Hüb. The Pine Carpet.*West. and Hump.*, t. 68, f. 1 (*T. simulata*); *Newman*, Brit. Moths, p. 152.

So far as I am aware this is scarce at Exeter, but common at Cann Wood, Plymouth (Mr. Bignell). I have taken one specimen only in a pine wood at Redhills, near Exeter. It appears on the wing in July. The larvæ are said to feed on the fir-trees.

GENUS, HYPsipETES, Stephens (Ypsipetes).**RUBERATA, Fre.** The Ruddy Highflier.*Newman*, Brit. Moths, p. 152.

Taken at Barnstaple, and in Stoke Wood, near Exeter (Mr. Rowdon).

IMPLUVIATA, Schiff. The May Highflier.*West. and Hump.*, t. 66, f. 3; *Newman*, Brit. Moths, p. 153.

Generally distributed, but not common, in the Exeter district; common at Plympton and Plymbridge (Mr. Bignell). It is also taken in the north, at Barnstaple; appearing on the wing in May and June. The larvæ feed on birch, hazel, and alder.

ELUTATA, Schiff. The July Highflier.

West. and Hump., t. 66, f. 5; *Newman*, Brit. Moths, p. 153.

A variable species, both as to colour and markings. It is frequent in woods and gardens in July.

GENUS, **MELANTHIA**, *Duponchel*.**RUBIGINATA, Schiff.** The Blue-bordered Carpet.

West. and Hump., t. 65, f. 16; *Newman*, Brit. Moths, p. 154.

Generally distributed, and tolerably common in the Exeter district, but rare in the Plymouth; frequent at Barnstaple and Dartmouth. Taken in woods and among coarse herbage in July.

Var. PLUMBATA, Curtis. The Dark Blue-bordered Carpet.

West. and Hump., t. 65, f. 17; *Newman*, Brit. Moths, p. 155.

This variety is rare. I have a specimen captured at Torquay, the only Devonshire example I have seen.

OCELLATA, Linn. The Purple Bar.

West. and Hump., t. 63, f. 19; *Newman*, Brit. Moths, p. 155.

This beautiful moth is generally distributed and comparatively common in woods and lanes in June and July.

ALBICILLATA, Linn. The Beautiful Carpet.

West. and Hump., t. 65, f. 13; *Newman*, Brit. Moths, p. 156.

Captured by Mr. Rowdon in Stoke Wood, near Exeter; at Barnstaple by Mr. G. F. Mathews. It appears on the wing in June.

GENUS, **MELANIPPE**, *Duponchel*.**TRISTATA, Linn.** The Small Argem and Sable.

West. and Hump., t. 65, f. 13; *Newman*, Brit. Moths, p. 157.

Very scarce. Taken by the Rev. J. Hellins at Chagford; and it has been captured at Crabtree by Mr. C. Rogers, and on Blackdown by Mr. H. S. Bishop. It is, however, rare. It appears on the wing in June.

PROCELLATA, Schiff. The Chalk Carpet.

West. and Hump., t. 65, f. 14; *Newman*, Brit. Moths, p. 158.

Taken at Torquay by Mr. Rowdon, and at Barnstaple by Mr. G. F. Mathews. The moth appears on the wing in May and June.

UNANGULATA, *Haw.* The Sharp-angled Carpet.

West. and Hump., t. 63, f. 26; *Newman*, Brit. Moths, p. 159.

Not a common species; at the same time several specimens may be taken in a season. The moth appears on the wing in June, on the borders of woods and in lanes thickly wooded.

RIVATA, *Hüb.* The Wood Carpet.

West. and Hump., t. 63, f. 25 (*H. sylvaticata*); *Newman*, Brit. Moths, p. 159.

Common, and generally distributed, appearing on the wing in the end of June and in July.

SUBTRISTATA, *Haw.* The Common Carpet.

West. and Hump., t. 63, f. 24; *Newman*, Brit. Moths, p. 160.

Common everywhere in woods and lanes, appearing on the wing in May, and again in July.

MONTANATA, *Schiff.* The Silver-ground Carpet.

West. and Hump., t. 63, f. 11; *Newman*, Brit. Moths, p. 162.

Common everywhere, amongst rough or coarse herbage, in June and July.

GALIATA, *Schiff.* The Galium Carpet.

West. and Hump., t. 63, f. 21; *Newman*, Brit. Moths, p. 163.

Generally distributed and common. Found in similar places to the above, and at the same time.

FLUCTUATA, *Linn.* The Garden Carpet.

West. and Hump., t. 63, fgs. 12, 13; *Newman*, Brit. Moths, p. 164.

Abundant everywhere all through the summer.

GENUS, *ANTICLEA*, *Stephens.*

SINUATA, *Schiff.* The Royal Mantle.

West. and Hump., t. 64, f. 14; *Newman*, Brit. Moths, p. 164.

Rare; Egg Buckland (Mr. C. Rogers), Bickleigh Bridge (Mr. H. S. Bishop), Slapton Lea and Buckfastleigh (Mr. G. F. Mathews).

RUBIDATA, *Schiff.* The Flame.

West. and Hump., t. 64, f. 13; *Newman*, Brit. Moths, p. 165.

This beautiful insect is widely distributed, but scarcely to be regarded as common, although taken freely at Bickleigh and Plympton. Dartmouth, abundant. It occurs

among oaks and other trees of low growth in our hedges, in lanes, &c., in June. I used to take it in a lane leading from Ide to the Dunsford Road, in the Exeter district.

BADIATA, Schiff. The Shoulder Stripe.

West. and Hump., t. 64, f. 8; *Newman*, Brit. Moths, p. 165.

Scarcely common, but generally distributed, in woods and thickly-wooded hedges in lanes, in April and May. When fresh this is one of our prettiest insects.

DERIVATA, Schiff. The Streamer.

West. and Hump., t. 64, fgs. 15-17; *Newman*, Brit. Moths, p. 166.

Rather rare in the Exeter district, and very rare in the Plymouth, but may be met with occasionally on the borders of woods in March and April.

GENUS, COREMIA, Duponchel.

PROPUGNATA, Schiff. The Flame Carpet.

West. and Hump., t. 63, f. 14; *Newman*, Brit. Moths, p. 168.

Common in all our lanes and margins of woods, and in gardens, in the Exeter district, but local, and not common in the Plymouth; near Cann Quarry, Plymbridge, in May and June.

FERRUGATA, Linn. The Twin-spot Carpet.

West. and Hump., t. 63, f. 3; *Newman*, Brit. Moths, p. 168.

Very common in gardens, lanes, and woods in May, and again in August.

UNIDENTARIA, Haw. The Dark-barred Twin-spot Carpet.

West. and Hump., t. 63, fgs. 3, 4; *Newman*, Brit. Moths, p. 169.

There is some uncertainty whether this is really a distinct species, or only a variety of *Ferrugata*. Guenée has combined them, making this his variety A. They certainly run very close; but it will be observed that the dark fascia or band is always more deeply indented on the outer edge, behind the middle, than in the former species. This appears to me to be a permanent character. The moth is rare near Plymouth.

GENUS, CAMPTOGRAMMA, Stephens.

BILINEATA, Linn. The Yellow Shell.

West. and Hump., t. 67, f. 4; *Newman*, Brit. Moths, p. 171.

Common in every hedge and garden throughout the county in June and July.

FLUVIATA, *Guenée*. The Gem.*Newman*, Brit. Moths, p. 172.

This was a few years ago regarded as one of our rarest species, and was added to the Devonshire fauna by Mr. E. Norcombe, who took specimens (but much-worn ones) on gas-lamps in the neighbourhood of Exeter; since then it has been bred in some numbers. Specimens have been taken at Torquay, Sidmouth, and Barnstaple. In 1857 it was common at gas-lamps in the suburbs of Plymouth; since then it has become rare (Mr. H. S. Bishop). It appears on the wing in June to September.

GENUS, *PHIBALAPTERYX*, *Stephens*.TERSATA, *Schiff*. The Fern.*West. and Hump.*, t. 66, f. 9; *Newman*, Brit. Moths, p. 173.

Taken by Mr. Rowdon at Torquay. It appears on the wing in June.

GENUS, *SCOTOSIA*, *Stephens*.DUBITATA, *Linn*. The Tissue Moth.*West. and Hump.*, t. 67, f. 2; *Newman*, Brit. Moths, p. 176.

Rare; captured by Mr. Rowdon at Alphington. It appears on the wing in August.

UNDULATA, *Linn*. The Scallop Shell.*West. and Hump.*, t. 67, f. 5; *Newman*, Brit. Moths, p. 179.

This beautiful moth is very scarce with us. I have seen perhaps half a dozen specimens taken in the Exeter district, and it has been taken at Horrabridge and Bickleigh Vale by Mr. Bishop. It appears on the wing in June.

CERTATA, *Hüb*. The Scarce Tissue.*West. and Hump.*, t. 67, f. 1; *Newman*, Brit. Moths, p. 178.

Very scarce; taken at Alphington. It appears on the wing in May and June.

GENUS, *CIDARIA*, *Treitschke*.PSITTACATA, *Schiff*. The Red-green Carpet.*West. and Hump.*, t. 66, f. 2; *Newman*, Brit. Moths, p. 180.

This pretty moth varies a great deal in the intensity of its markings, as also in the ground-colour of the wings. It is of frequent occurrence, in September, in lanes and near woods, and generally distributed.

MIATA, Linn. The Autumn Green Carpet.

West. and Hump., t. 63, f. 9; *Newman*, Brit. Moths, p. 181.

A scarce insect, but taken occasionally on ivy blossoms, at Topsham and elsewhere, in October. It is very rare in the Plymouth district; only one specimen is recorded, taken by Mr. Rogers.

PICATA, Hüb. The Short-cloak Carpet.

West. and Hump., t. 63, f. 27 (*H. biangulata*); *Newman*, Brit. Moths, p. 182.

A frequent species on the borders of woods, amongst rough herbage, and beat out of thick hedges, in June.

CORYLATA, Thb. The Hazel, or Broken-barred Carpet.

West. and Hump., t. 63, fgs. 29-31; *Newman*, Brit. Moths, p. 182.

Not uncommon in the neighbourhood of woods, and in thick hedges in lanes, in June, and generally distributed. The larvæ feed on black-thorn.

RUSSATA, Schiff. The Common Marbled Carpet.

West. and Hump., t. 64, f. 2 (*P. centum-notata*); *Newman*, Brit. Moths, pp. 184-5.

A common but very variable insect, both as to size or expanse of wings and colouring. It is generally distributed in woods, gardens, and lanes in May, and again in August. The larva entirely bluish-green, with no distinct markings. It feeds on the leaves of willow. When about to spin up, it draws the two edges of a leaf together with strong silken threads. It there undergoes its transformation as the leaf hangs on the tree. The pupa is somewhat angular, and of a blue-green colour, but turns darker before the insect emerges. The moth came out on August 21st, and proved to be the pale autumnal variety.

Var. COMMA-NOTATA, Haw. The Yellow-marbled Carpet.

Newman, Brit. Moths, p. 185, f. 2.

This beautiful variety is not uncommon, and widely distributed, appearing at the same time as the species.

IMMANTA, Haw. The Marbled Carpet.

West. and Hump., t. 64, f. 3; *Newman*, Brit. Moths, pp. 185-6.

Not common; taken at Efford by Mr. Bignell. Mr. D'Orville bred this from larvæ found feeding on the wild strawberry (1862).

SUFFUMATA, Schiff. The Water Carpet.*West. and Hump.*, t. 64, f. 7; *Newman*, Brit. Moths, p. 188.

Generally distributed, and common. A variable insect as regards both markings and intensity of colouring of the anterior wings. The moth appears on the wing in April and May.

Var. PICEATA, Steph. The Pitchy Carpet.*Newman*, Brit. Moths, p. 188.

This variety is very uncommon, so far as my experience goes.

SILACEATA, Schiff. The Small Phoenix Moth.*West. and Hump.*, t. 63, f. 28; *Newman*, Brit. Moths, p. 189.

A very variable and generally-distributed species. Met with in woods, and in thick hedges amongst rank herbage, &c., in May, and again in August.

PRUNATA, Linn. The Phoenix Moth.*West. and Hump.*, t. 64, fgs. 4-6; *Newman*, Brit. Moths, p. 190 (*C. ribesaria*).

Frequent, but not abundant, about black-thorn hedges, and in gardens; appearing on the wing in July.

TESTATA, Linn. The Chevron.*West. and Hump.*, t. 64, f. 22; *Newman*, Brit. Moths, p. 191.

Not common, but taken occasionally among salallows in July.

POPULATA, Linn. The Poplar Moth.*West. and Hump.*, t. 64, fgs. 19, 20; *Newman*, Brit. Moths, p. 191.

By no means a common insect; but three or four perhaps may be taken in a season, in July. In the West it is captured at Cann Woods and Bickleigh.

FULVATA, For. The Barred Yellow.*West. and Hump.*, t. 63, f. 16; *Newman*, Brit. Moths, p. 192.

Not common in hedges, but generally distributed amongst coarse herbage on wood sides, in July.

PYRALIATA, Schiff. The Barred Straw.*West. and Hump.*, t. 64, f. 23; *Newman*, Brit. Moths, p. 192.

Not common, but widely distributed in lanes and wood sides, in July and August.

DOTATA, Clk. The Spinach Moth.*West. and Hump.*, t. 63, f. 21; *Newman*, Brit. Moths, p. 193.

Rare in the Exeter district; taken in Stoke Wood.

GENUS, **PELURGA**, *Hübner*.COMITATA, *Hüb.* The Dark Spinach.*West. and Hump.*, t. 64, f. 18; *Newman*, Brit. Moths, p. 194.

Very rare; taken by Mr. Rowdon in Stoke Wood. It appears on the wing in July.

Family, **EUBOLIIDÆ**, *Guenée*.GENUS, **EUBOLIA**, *Duponchel*.MENSURARIA, *Schiff.* The Small Mallow.*West. and Hump.*, t. 62, fgs. 17-22 (*L. Chenopodiaria*); *Newman*, Brit. Moths, p. 196.

Generally distributed, but can scarcely be called common at Exeter; is said to be plentiful at Bickleigh and Plymbridge (Mr. Bignell). The moth appears on the wing in June and August.

CERVINARIA, *Schiff.* The Mallow.*West. and Hump.*, t. 62, f. 16; *Newman*, Brit. Moths, p. 194.

This fine insect is said by Mr. Bignell to be common at Efford and Stoke, and is taken occasionally in the Exeter district.

PALUMBARIA, *Schiff.* The Belle.*West. and Hump.*, t. 62, f. 15 (*P. plumbaria*); *Newman*, Brit. Moths, p. 196.

Not uncommon, generally speaking, and in some localities plentiful. I have seen more on the cliffs beyond Exmouth than anywhere else, in June and July.

BIPUNCTARIA, *Schiff.* The Chalk Carpet.*West. and Hump.*, t. 62, f. 18; *Newman*, Brit. Moths, p. 197.

Common at Bovisand and Crabtree (Mr. Bignell).

LINEOLATA, *Schiff.* The Oblique-striped.*West. and Hump.*, t. 66, f. 12; *Newman*, Brit. Moths, p. 197.

This pretty little species is rather plentiful some seasons on Exmouth Warren, where it may be captured in July.

GENUS, **ANAITIS**, *Duponchel*.PLAGIATA, *Linn.* The Treble-bar.*West. and Hump.*, t. 64, f. 25; *Newman*, Brit. Moths, p. 198.

Widely distributed, and tolerably plentiful, but can scarcely be called common; appearing in woods and lanes in May, and again in August.

GENUS, *CHEILAS*, *Treitschke*.SPARTIATA, *Fue*. The Streak.

West. and Hump., t. 67, fgs. 13, 14; *Newman*, Brit. Moths, p. 200.

Scarce in the Exeter district. Has been taken in the neighbourhood of Dunsford by Mr. D'Orville, whence he obtained eggs, and bred a good batch of the insects. It is local, and not common in the Plymouth district; taken at Marsh Mills and Plymbridge. The moth appears on the wing in September.

Family, SIONIDÆ, *Guenée*.

GENUS, *TANAGRA*, *Duponchel*.

CHÆROPHYLLATA, *Linn*. The Chimney Sweeper.

West. and Hump., t. 71, f. 4; *Newman*, Brit. Moths, p. 201.

Not common; taken near Plymouth and on Dartmoor; plentiful at Bolt Head.

Section, DELTOIDÆ, *Latreille*.

Family, HYPENIDÆ, *Guenée*,

GENUS, *HYPENA*, *Schrank*.

PROBOSCIDALIS, *Linn*. The Spout Eggar Likeness.

West. and Hump., t. 74, fgs. 9, 10; *Stainton*, Manual, vol. ii., p. 127.

Very abundant amongst nettles and coarse herbage, in June and September.

ROSTRALIS, *Linn*. The Button Snout.

West. and Hump., t. 74, fgs. 12, 13; *Stainton*, Manual, vol. ii. p. 128.

Rare; taken at Plymouth and in the Exeter district in July and September.

CRASSALIS, *Fab*. The Beautiful Snout.

West. and Hump., t. 74, f. 15; *Stainton*, Manual.

This pretty insect was taken many years ago, by Messrs. Chant and Bentley, near Spitchwick, and Mr. D'Orville took it at Dunsford, in 1859. He afterwards bred the insect in some numbers. The caterpillar feeds on the whortleberry. The moth appears on the wing in June and July. Mr. Mathews has taken it near Clovelly.

GENUS, *HYPENODES*, *Guenée*.

ALBISTRIGALIS, *Haw*. The White-line Snout.

West. and Hump., t. 75, f. 5; *Stainton*, Manual, vol. ii. p. 128.

Taken on Exmouth Warren, Barnstaple, and Dartmouth. Not uncommon in July. Taken also at Plymouth in dry sandy places. Comes to "sugar."

COSTÆSTRIGALIS, Steph. The Dark-line Snout.

West. and Hump., t. 75, f. 6; *Stainton, Manual*, vol. ii. p. 129.

Very rare. Only one specimen has fallen to my lot in twenty years' collecting. The moth appears on the wing in July. Mr. Mathews has taken it both at Barnstaple and Dartmouth; and the Rev. E. Horton in North Devon, in July.

Family, HERMINIIDÆ, *Guenée*.

GENUS, **RIVULA**, *Guenée*.

SERICEALIS, Schiff. The Straw Dot.

West. and Hump., t. 78, f. 11; *Stainton, Manual*, p. 130.

Rare in the Exeter district. Taken on the railway banks on the South Devon line in June and July.

GENUS, **HERMINIA**, *Latreille*.

TARSIPENNALIS, Tre. The Fan-foot.

West. and Hump., t. 74, f. 20 (*P. tarsiorinalis*); *Stainton, Manual*, vol. ii. p. 131.

Rather common, amongst nettles and rank herbage by the road sides and woods, and in gardens, in June and July.

BARBALIS, Linn.

West. and Hump., t. 74, fgs. 17, 18; *Stainton, Manual*, vol. ii. p. 131.

This requires very close observation to distinguish it from *Tarsipennalis*. The moth is found on the wing in June.

GRISEALIS, Schiff. } The Small Fan-foot.
NEMORALIS, Fab. }

West. and Hump., t. 74, f. 21; *Stainton, Manual*, vol. ii. p. 131.

This is not so numerous as the above. It is taken in similar places, and about the same time.

Section, PYRALIDES, *Linnaeus*.

Family, ODONTIIDÆ, *Guenée*.

GENUS, **ODONTIA**, *Duponchel*.

DENTALIS, Sch. The Starry Brindled.

West. and Hump., t. 78, fgs. 17, 18; *Stainton, Manual*, vol. ii. p. 133.

Messrs. Westwood say of this insect: "Extremely rare.

Near London, and Tavistock, in Devonshire, it appears at the end of June and beginning of August."

GENUS, **PYRALIS**, *Linnaeus*.

FARINALIS, Linn. The Meal Moth.

West. and Hump., t. 75, f. 18; *Stainton, Manual*, vol. ii. p. 134.

Sometimes abundant, in stables, and barns, and outhouses, in June and July.

FIMBRIALIS, Schiff. The Gold-fringe.*West. and Hump.*, t. 75, f. 16; *Stainton, Manual*, vol. ii. p. 134.

Taken by Mr. D'Orville in the Exeter district, but very rare.

GLAUCINALIS, Linn. The Double Striped.*West. and Hump.*, t. 75, f. 14; *Stainton, Manual*, vol. ii. p. 135.

Also taken by Mr. D'Orville in the Exeter district.

GENUS, AGLOSSA, Linnaeus.**PINGUINALIS, Linn.** The Large Tabby.*West. and Hump.*, t. 75, f. 9; *Stainton, Manual*, vol. ii. p. 135.

Very common, in stables and outhouses, farm buildings, &c., in June and July.

CUPREALIS, Hüb. The Small Tabby.*West. and Hump.*, t. 75, f. 10; *Stainton, Manual*, vol. ii. p. 135.

Very scarce. Taken in the Exeter district in July.

GENUS, CLEODOBIA, Stephens.**ANGUSTALIS, Schiff.** The Small Snout.*West. and Hump.*, t. 56, f. 4; *Stainton, Manual*, vol. ii. p. 136.

Scarce. Taken on Exmouth Warren, on the sand-hills, in June and July; also at Barnstaple and Dartmouth.

Family, ENNYCHIIDÆ, Guenée.**GENUS, PYRAUSTA, Schrank.****PUNICEALIS, Schiff.** The Purple and Gold.*West. and Hump.*, t. 76, fgs. 13, 14; *Stainton, Manual*, vol. ii. p. 137.

Generally distributed, in both north and south, in fields shut up for hay, and in open spaces in woods, but more especially in the former, in June and July; flying in the hottest sunshine.

PURPURALIS, Linn. The Crimson and Gold.*West. and Hump.*, t. 76, f. 12; *Stainton, Manual*, vol. ii. p. 138.

Scarce. Captured in similar places to the above, both in the north and south of the county, in May and September.

OSTRINALIS, Hüb. The Scarce Purple and Gold.*West. and Hump.*, t. 76, f. 15; *Stainton, Manual*, vol. ii. p. 138.

Rare. I captured a specimen on the grassy sloping cliffs beyond Exmouth in June. Mr. Mathews has taken it at Dartmouth.

GENUS, **HERBULA**, *Gueneé*.**CÆSPITALIS**, *Schiff.* The Straw-barred.*West. and Hump.*, t. 76, f. 17; *Stainton*, Manual, vol. ii. p. 139.

Mr. J. C. Dale captured this species at Appledore; and Mr. Mathews has taken it both at Barnstaple and Dartmouth; and Mr. H. J. Fust records this species as occurring in Devon. (p. 484.) The moth appears on the wing in May and August.

GENUS, **ENNYCHIA**, *Treitschke*.**CINGULALIS**, *Linn.* The Silver-barred Sable.*West. and Hump.*, t. 76, f. 10; *Stainton*, Manual, vol. ii. p. 139.

Plymouth and Bolt Head rather plentiful, also Morthoe. Not common in the Exeter district. Appearing on the wing in grassy places near woods in May, and again in September.

ANGUINALIS, *Geof.* The Wavy-barred Sable.*West. and Hump.*, t. 76, f. 9; *Stainton*, Manual, vol. ii. p. 140.

This is recorded by Mr. Fust on the authority of Mr. G. F. Mathews. The moth appears on the wing in May, and again in August.

OCTOMACULALIS, *Linn.* The White Spot.*West. and Hump.*, t. 76, f. 8; *Stainton*, Manual, vol. ii. p. 140.

Very rare; has been taken by Mr. D'Orville. The moth appears on the wing in June and July.

Family, **ASOPIIDÆ**, *Gueneé*.GENUS, **ENDOTRICHIA**, *Zeller*.**FLAMMEALIS**, *Schiff.* The Rosy Flounced.*West. and Hump.*, t. 75, f. 17; *Stainton*, Manual, vol. ii. p. 114.

This has been taken at Lynton, and Dartmouth abundant. It appears on the wing in June and July.

Family, **STENIIDÆ**, *Gueneé*.GENUS, **DIASEMIA**, *Hübner*.**LITERALIS**, *Scop.* The Lettered China-mark.*West. and Hump.*, t. 76, f. 19; *Stainton*, Manual, vol. ii. p. 142.

This beautiful and delicate little moth has been taken at Plymouth, High Bickington, and near Exeter. In this district it is confined, so far as my observations go, to the side of a hill, and is swept out of the dry, rough herbage in July.

GENUS, *STENIA*, Guenée.

PUNCTALIS, Schiff. The Long-legged Pearl.

West. and Hump., t. 78, f. 3 (*M. longipedalis*); *Stainton, Manual*, vol. ii. p. 143.

Sidmouth and on Exmouth Warren among grasses, &c. on the sand-hills in July and August. Scarce at Baggy Point, North Devon.

Family, HYDROCAMPIDÆ, Guenée.

GENUS, *CATACTYSTA*, Hübner.

LEMNALIS, Linn. The Small China-mark.

West. and Hump., t. 76, f. 24; *Stainton, Manual*, vol. ii., p. 144.

I bred this species May 23rd, 1863. Larva blackish-brown, head piceous-yellow, mouth ferruginous, the jaws black, basal half of head velvety-black, pro-legs black. Spins a case interwoven with leaves of duckweed and bits of grass, and floats just submerged. The larva, when under water, appears as if clothed in silver, from its being covered with short hairs, amongst which air adheres, so that the larva is enveloped in a layer of air. The moth is very common round our ditches and ponds, almost everywhere, in May, and again in August.

GENUS, *PARAPONYX*, Hübner.

STRATIOTALIS, Linn. The Ringed China-mark.

West. and Hump., t. 76, f. 26; *Stainton, Manual*, vol. ii. p. 144.

I give this on the authority of Mr. H. J. Fust's *List*, p. 486. The moth flies in June and July.

GENUS, *HYDROCAMPA*, Latreille.

NYMPHÆALIS, Linn. The Brown China-mark.

West. and Hump., t. 76, f. 20; *Stainton, Manual*, vol. ii. p. 145.

Common, in all our stagnant ponds and ditches, throughout the county, in June and July.

STAGNALIS, Don. The Beautiful China-mark.

West. and Hump., t. 67, f. 21; *Stainton, Manual*, vol. ii. p. 145.

Abundant in the Exminster marshes, and ponds and ditches everywhere, in June and July.

Family, BOTYDÆ, Guenée.

GENUS, *BOTYS*, Latreille.

VERTICALIS, Linn. The Mother-of-Pearl.

West. and Hump., t. 77, f. 8; *Stainton, Manual*, vol. ii. p. 149.

Abundant everywhere, among nettles and coarse herbage, in June and July.

LANCEALIS, *Schiff.* The Long-winged Pearl.

West. and Hump., t. 77, f. 7; *Stainton, Manual*, vol. ii. p. 149.

Scarce; taken at Plymouth, and in the Exeter district, and at Barnstaple and Dartmouth, in June.

FUSCALIS, *Schiff.* The Cinereous Pearl.

West. and Hump., t. 78, fgs. 4-6; *Stainton, Manual*, vol. ii. p. 149;

Mr. H. J. Fust, List, p. 486.

The moth appears on the wing in June.

TERREALIS, *Treit.* The Earth-coloured Pearl.

Stainton, Manual, vol. ii. p. 150.

Rare; taken at Lynmouth and Clovelly (Mr. G. F. Mathews).

ASINALIS, *Hüb.* The Dingy Pearl.

West. and Hump., t. 77, f. 6; *Stainton, Manual*, vol. ii. p. 150.

Also rare. Specimens have been taken at Plymouth, Dartmouth, and Instow, by Mr. G. F. Mathews and the Rev. E. Horton.

URTICALIS, *Linn.* The Small Magpie.

West. and Hump., t. 77, fgs. 1, 2; *Stainton, Manual*, vol. ii. p. 150.

Very abundant everywhere, among nettles and coarse herb-age, in August and September.

CROCEALIS, *Treit.* The Small Straw China-mark.

West. and Hump., t. 77, f. 18 (*M. ochrealis*); *Stainton, Manual*, vol. ii. p. 151.

Recorded in Mr. H. Jenner Fust's *List*, p. 486, as taken in Devon, and by Mr. Stainton as taken at Sidmouth.

GENUS, **EBULEA**, *Guenée*.

SAMBUCALIS, *Schiff.* The Garden China-mark.

West. and Hump., t. 76, fgs. 27, 28; *Stainton, Manual*, vol. ii. p. 151.

Taken at Plymouth freely, and at Sidmouth not uncommon; June and September.

GENUS, **PIONEA**, *Guenée*.

FORFICALIS, *Linn.* The Garden Pebble.

West. and Hump., t. 77, f. 3; *Stainton, Manual*, vol. ii. p. 152.

Generally distributed, in gardens and orchards, from June to September.

GENUS, **SPILODES**, *Guenée*.

STICTICALIS, *Linn.* The Diamond Spot.

West. and Hump., t. 78, f. 13; *Stainton, Manual*, vol. ii. p. 153.

Taken in Devon, as recorded in Mr. H. J. Fust's *List*, p. 486; Instow, Ilfracombe, and Dartmouth (Mr. Mathews).

CINCTALIS, Treit. The Lesser Pearl.*West. and Hump.*, t. 77, f. 10; *Stainton, Manual*, vol. ii. p. 153.

On the authority of Mr. H. J. Fust; also at Barnstaple and Dartmouth (Mr. Mathews).

GENUS, MARGARODES.**UNIONALIS, Hüb.** The Union Moth.*Entom. Annual*, 1860, pl. 1, f. 4.

One taken near Dartmouth in August, 1877 (Mr. G. F. Mathews); taken by Mr. George King within two miles of Torquay. (See *Entom. Intelligencer*, vol. vii. p. 19.)

GENUS, SCOPULA, Schrank.**LUTEALIS, Haw.** The Yellow Brindled.*Stainton, Manual*, vol. ii. p. 164.

Captured in Devon, as recorded by Mr. H. J. Fust, p. 486.

OLIVALIS, Schiff. The White Brindled.*West. and Hump.*, t. 78, f. 14; *Stainton, Manual*, vol. ii. p. 154.

Common amongst nettles and coarse herbage. I bred this in May, 1862, from larvæ feeding on nettles.

PRUNALIS, Schiff. The Dusky Brindled.*West. and Hump.*, t. 78, fgs. 15, 16; *Stainton, Manual*, vol. ii. p. 155.

Common, and generally distributed; beaten out of coarse herbage and hedges in June and July.

FERRUGALIS, Hüb. The Rusty Dot.*West. and Hump.*, t. 77, f. 20; *Stainton, Manual*, vol. ii. p. 155.

I have taken this insect frequently at dusk on the flowers of the arbutus. It is not uncommon in the neighbourhood of Exeter in September, and also at Barnstaple and Dartmouth. (See description of the larvæ of this species, and the life-history of the insect, by Mr. Buckler, in *Entomologist's Magazine* for January, 1878.)

Section, PLICATÆ.**Family, SCOPARIIDÆ, Guenée.****GENUS, STENOPTERYX, Guenée.****HYBRIDALIS, Hüb.** The Rush Veneer.*West. and Hump.*, t. 76, f. 30; *Stainton, Manual*, vol. ii. p. 155.

Generally distributed, and common in woods, gardens, hedges, &c., in June and July.

GENUS, *SCOPARIA*, *Haworth*.*AMBIGUALIS*, *Treit.* The Hoary Grey.*West. and Hump.*, t. 114, f. 34; *Stainton*, Manual, vol. ii. p. 161.

Generally distributed, and frequent in woods and rocky places near the Moor, in June and July.

CEMBRALIS, *Haw.* The Large Grey.*West. and Hump.*, t. 114, f. 32; *Stainton*, Manual, vol. ii. p. 161.

Recorded by Mr. H. Jenner Fust as taken in Devon (p. 488).

PYRALALIS, *Hüb.* The Yellow Stigmaed Grey.*West. and Hump.*, t. 114, f. 35 (*Eudorea dubitalis*); *Stainton*, Manual, vol. ii. p. 161.

Common everywhere in woods where fir-trees abound, in June and July.

MURALIS, *Curtis.* The Wall Grey.*West. and Hump.*, t. 114, f. 39; *Stainton*, Manual, vol. ii. p. 162.

Frequent on walls among mosses and lichens around Exeter and in the Valley of Rocks, North Devon, in June and July.

LINEOLALIS, *Curtis.* The Striped Grey.*West. and Hump.*, t. 114, f. 38; *Stainton*, Manual, vol. ii. p. 162.

Taken not uncommonly in the Exeter district in woods and gardens, and on outhouses, &c., in June and July.

MERCURIALIS, *Steph.* The Small Grey.*West. and Hump.*, t. 115, f. 3; *Stainton*, Manual, vol. ii. p. 162 (*E. frequentella*).

Generally distributed, and common in June to September.

ZELLERI. Zeller's *Scoparia*.Has been taken somewhat freely in North Devon. (*Ent. Ann.* 1871, p. 77.)*RESINALIS*, *Steph.* The Resin Grey.*West. and Hump.*, t. 114, f. 40; *Stainton*, Manual, vol. ii.

This pretty little species was taken in some numbers by Mr. D'Orville in his garden at Alphington, near Exeter; and I have captured it in Stoke Wood in June.

TRUNCICOLALIS, *Stain.* The Fir-trunk Grey.*Stainton*, Manual, vol. ii. p. 161.

Scarce; but met with occasionally in woods in the Exeter district in June and July.

COARCTALIS, Zel. The Narrow-winged Grey.

West. and Hump., t. 115, f. 1 (*E. angustea*); *Stainton, Manual*, vol. ii. p. 163.

Rare in the Exeter district; appearing on the wing in April and June. Taken also in the Valley of Rocks (Mr. Dale).

PALLIDULALIS, Guenée.

West. and Hump., t. 114, f. 37; *Stainton, Manual*, vol. ii. p. 163.

Taken at Branton Burrows, on the authority of the late Mr. J. C. Dale, of Glanvilles Weston.

Section, CRAMBI.

Family, CRAMBIDÆ, Guenée.

GENUS, PLATYLES, Guenée.

CERUSELLUS, Schiff.

West. and Hump., t. 116, fgs. 35-37; *Stainton, Manual*, vol. ii. p. 180.

Rare. One specimen captured at Dunsford, August 21st, 1862.

GENUS, CRAMBUS, Fabricius.

PRATELLUS, Linn. The Dark Inlaid Veneer.

West. and Hump., t. 116, f. 11; *Stainton, Manual*, vol. ii. p. 181.

Common in every pasture from May to August. This group of moths may be known to the young entomologist by their resting on the stems of grass, or whatever they may pitch upon, with their heads downwards. In flying from one place to another they alight with their heads uppermost; but they instantly turn themselves round with their heads downwards, in which position they remain.

PASCUELLUS, Linn. The Inlaid Veneer.

West. and Hump., t. 116, f. 8; *Stainton, Manual*, vol. ii. p. 181.

Taken in the Exeter district, in meadows, in June.

HAMELLUS, Thb. The Hook-streaked Veneer.

West. and Hump., t. 116, f. 8; *Stainton, Manual*, vol. ii. p. 181.

Rare. Captured on Exmouth Warren in July.

ULIGINOSELLUS, Zel. The Marsh Veneer.

Stainton, Manual, vol. ii. p. 182.

Taken by Mr. D'Orville.

MARGARITELLUS, Hüb. The Pearl-streaked Veneer.

West. and Hump., t. 116, f. 39; *Stainton, Manual*, vol. ii. p. 183;
Stephens, Brit. Ent., vol. iv.; *Haust.*, p. 40, f. 2.

Taken on the cliffs, amongst coarse herbage, at Exmouth, on towards Budleigh Salterton, in June.

PINETELLUS, *Clk.* The Pearl Veneer.

West. and Hump., t. 116, f. 18; *Stainton*, Manual, p. 183.

Not common, but generally distributed. The Valley of Rocks (Mr. J. C. Dale); Exeter district, in woods, in July and August.

LATISTRIELLUS, *Haw.* The Broad-streaked Veneer.

West. and Hump., t. 116, f. 17; *Stainton*, Manual, vol. ii. p. 184.

Not common. Taken at Teignmouth by Captain Blomer, and in the Exeter district in July.

PERLELLUS, *Scop.* The Streaked-satin Veneer.

West. and Hump., t. 116, fgs. 2-4; *Stainton*, Manual, vol. ii. p. 184.

Not common. Taken in the Valley of Rocks by Mr. Dale, and by myself in the Exeter district, near the sea, among dry grasses, &c., in July and August.

WARRINGTONELLUS, *Stain.* The Dark-streaked Satin Veneer.

West. and Hump., t. 116, f. 1; *Stainton*, Manual, vol. ii. p. 184.

Taken by Mr. D'Orville in the Exeter district. This moth is on the wing in July and August.

TRISTELLUS, *Schiff.* The Brown-edged Veneer.

West. and Hump., t. 116, fgs. 28-33; *Stainton*, Manual, vol. ii. p. 183.

Common in every meadow and grass-field, flying a short distance, then resting on the culms of grass. A most variable species in the colour and intensity of the markings on its anterior wings. Some of the varieties are so distinctly marked as to lead Messrs. Westwood and Humpreys to figure six, regarding them as distinct species.

CONTAMINELLUS, *Hub.* The Chalk Veneer.

West. and Hump., t. 116, f. 25 (*C. arinellus*); *Stainton*, Manual, vol. ii. p. 183.

Very scarce. I took it in Stoke Wood, near Exeter, August 12th, 1862.

GENICULELLUS, *Haw.* The Elbow-striped Veneer.

West. and Hump., t. 116, f. 24 (*C. inquinatellus*); *Stainton*, Manual, vol. ii. p. 183.

Abundant in every grass-field, and lanes and open places in woods, in July and August.

CULMELLUS, *Linn.* The Small Straw-coloured Veneer.

West. and Hump., t. 116, f. 34; *Stainton*, Manual, vol. ii. p. 182.

Very common in pastures and sides of woods throughout the county in June and July.

HORTUELLUS, Hüb. The Garden Veneer.*West. and Hump.*, t. 116, f. 13; *Stainton, Manual*, vol. ii. p. 182.

Not common. Taken by the side of a hedge in a meadow at Foxhays, near Exeter, June 30th, 1856.

Family, CHILIDÆ, Guenée
GENUS, SCHÆNOBIUS, Duponchel.

FORFICELLUS, Thb. The Aquatic Veneer.*West. and Hump.*, t. 117, f. 1; *Stainton, Manual*, vol. ii. p. 185.

Very rare. I captured one specimen in a meadow by the St. David's Railway Station, August 1st, 1862.

Family, PHYCIDÆ, Guenée.
GENUS, ANERASTIA, Zeller.

LOTELLA, Hüb. The Pale-edged Flame Veneer.*West. and Hump.*, t. 115, fgs. 38, 39; *Stainton, Manual*, vol. ii. p. 168.

Very rare. I took it on Exmouth sand-hills, August 6th, 1856. Westwood and Humphreys give June as the time of appearance for this species.

GENUS, ILITHYIA, Latreille.

CARNELLA, Linn. The Rosy Veneer.

West. and Hump., t. 115, f. 36; *Stainton, Manual*, vol. ii. p. 176;
Donovan, Brit. Insects, vol. v., f. 5, pl. 163.

This very beautiful insect occurs on the cliffs, amongst grass and other herbage, on the south coast. I have taken it between Exmouth and Budleigh Salterton in August.

GENUS, HOMESOMA, Curtis.

SINUELLA, Fab. The Twin-barred Knot-horn.*West. and Hump.*, t. 115, f. 32; *Stainton, Manual*, vol. ii. p. 170.

Rare; I took two specimens on the sand-hills at Exmouth, in August, 1856. Mr. Dale captured it at Teignmouth.

NIMBELLA, Zel. The Clouded Knot-horn.*Stainton, Manual*, vol. ii. p. 169.

Captured on the sand-hills at Exmouth, among rushes, &c., in August, 1857.

NEBULELLA, Guenée. The Bright-clouded Knot-horn.*Stainton, Manual*, vol. ii. p. 169.

Taken by Mr. D'Orville in the Exeter district.

ELUVIELLA, Guenée. The Ermine Knot-horn.

West. and Hump., t. 115, f. 4 (*P. nebulella*); *Stainton, Manual*, vol. ii. p. 170.

Captured in the Exeter district in August, 1862; but very scarce.

GENUS, **EPHESTIA**, *Gueneé*.

ELUTELLA, *Hüb.* The Cinereous Knot-horn.

West. and Hump., t. 115, f. 7; *Stainton*, Manual, vol. ii. p. 168.

I have taken this in numbers in a wholesale chemist's shop in Exeter, in July. It is probably an imported species.

SEMIRUFELLA, *Haw.* The Red-streaked Knot-horn.

West. and Hump., t. 115, f. 10; *Stainton*, Manual, vol. ii. p. 168.

Captured by Mr. D'Orville, in the Exeter district, in 1871; it is found on the wing in July.

ARTEMISIELLA, *Stain.* The Wormwood Knot-horn.

Stainton, Manual, vol. ii. p. 173.

Taken by Mr. D'Orville in his garden.

GENUS, **CRYPTOBLABES**, *Zeller*.

BISTRIGELLA, *Haw.* The Double-striped Red Knot-horn.

West. and Hump., t. 115, f. 11; *Stainton*, Manual, vol. ii. p. 171.

Captured in Devon, according to Mr. H. J. Fust's *List*, p. 490. The moth appears on the wing in June.

GENUS, **PLODIA**, *Gueneé*.

INTERPUNCTELLA, *Hüb.*

Stainton, Manual, vol. ii. p. 169 (*Ephestia*).

Devon (Mr. H. J. Fust's *List*, p. 490).

GENUS, **NEPHOPTERYX**, *Zeller*.

ANGUSTELLA, *Hüb.* The Small Ermine Knot-horn.

West. and Hump., t. 115, f. 9 (?); *Stainton*, Manual, vol. ii. p. 171.

Taken in Devon, on the authority of Mr. H. J. Fust's *List*, p. 490.

GENUS, **PHYCIS**, *Fabricius*.

CARBONARIELLA, *F. & R.* The Brown Knot-horn.

West. and Hump., t. 115, f. 29 (*P. fusca*); *Stainton*, Manual, vol. ii.

Mr. H. J. Fust's *List*, p. 490.

ORNATELLA, *Schiff.* The Speckled Knot-horn.

West. and Hump., t. 115, f. 25; *Stainton*, Manual, vol. ii. p. 176.

Scarce. Two specimens I caught in the tool-house in Coaver Garden, in June, 1859.

ABIETELLA, *Schiff.* The Pine Knot-horn.

West. and Hump., t. 115, f. 26; *Stainton*, Manual, vol. ii. p. 175.

Messrs. Westwood and Humphreys say: "Taken in Devonshire in June."

SUBORNATELLA, *Dup.* }
 DILUTELLA, *Hüb.* }

West. and Hump., t. 115, f. 6; *Stainton, Manual*, vol. ii. p. 176.

Taken by Mr. D'Orville.

ROBORELLA, *Schiff.* The Dotted Knot-horn.

West. and Hump., t. 115, f. 27; *Stainton, Manual*, vol. ii. p. 175.

I have captured this species in Stoke Wood, but rarely in July.

GENUS, RHODOPHÆA, *Guénéé.*

CONSOCIELLA, *Hüb.* The Allied Knot-horn.

West. and Hump., t. 115, f. 17; *Stainton, Manual*, vol. ii. pp. 170-71.

Stoke Wood, near Exeter; bred, July 6th. Not uncommon among oaks.

MARMORELLA, *Haw.* The Marbled Knot-horn.

West. and Hump., t. 115, f. 15; *Stainton, Manual*, vol. ii. p. 173
 (*Myelois marmorea*).

Taken by Mr. D'Orville in the Exeter district. Appears in woods in June and July.

TUMIDELLA, *Zinck.* The Warted Knot-horn.

West. and Hump., t. 115, f. 12; *Stainton, Manual*, vol. ii. p. 171
 (*Acrobasis tumidella*).

Frequent among oaks in woods in the Exeter district, in July and August.

GENUS, ONCOCERA, *Stephens.*

AHENELLA, *Schiff.* The Mouse-coloured Veneer.

West. and Hump., t. 115, f. 41 (*Araxes ahenella*); *Stainton, Manual*, vol. ii. p. 174.

Taken in Devon, on the authority of Mr. H. J. Fust's *List*, p. 490.

GENUS, MELIA, *Curtis.*

SOCIELLA, *Linn.* The Pale-shouldered.

West. and Hump., t. 114, f. 27 (*Ilythia sociella*); *Stainton, Manual*, vol. ii. p. 164 (*A. colonella*).

Taken in considerable numbers in a lane leading from St. Thomas to Redhills, near the old quarry, June 19th, 1857. These moths were flying about the holes and nests of some humble bees, on the cells of which I have no doubt that the larvæ fed. (?)

GENUS, *GALLERIA*, *Fabricius*.*CERELLA*, *Linn.* The Honey-comb Moth.

West. and Hump., t. 114, fgs. 25, 26; *Stainton*, Manual, vol. ii. p. 164 (*G. Mellonella*).

I bred this pretty insect in great numbers from the nests of *Bombus terrestris*, and also from some old comb left in bee-hives.

Section, *TORTRICES*.Family, *CYMBIDÆ*, *Guenée*.GENUS, *HALIAS*, *Treitschke*.*PRASINANA*, *Linn.* The Green Silver-lines.

West. and Hump., t. 79, fgs. 1-3; *Stainton*, Manual, vol. ii. p. 187.

Not common, but is met with occasionally in our woods, and in lanes whose hedges are thick with oak and other trees. The moth appears in May and June, and is very sluggish when beaten out of the trees.

QUERCANA, *Schiff.* The Scarce Silver-lines.

West. and Hump., t. 79, fgs. 4-6; *Stainton*, Manual, vol. ii. p. 187.

Rare. Taken by Mr. E. Norcombe in the Exeter district. The moth appears on the wing in June and July.

Family, *TORTRICIDÆ*, *Guenée*.GENUS, *SAROTHERIPUS*, *Curtis*.*REVAYANA*, *Schiff.* Revay's Moth.

West. and Hump., t. 91, fgs. 11-16 (*new var.*); *Stainton*, Manual, vol. ii.

This beautiful moth is extremely variable, both in colour and markings. No less than fifteen of these varieties have received names, and were considered as distinct species until the intermediate forms were obtained and put together, so that the variation could be traced. The moth is on the wing from July to December.

Var. AFZELIANUS, *Gml.*

West. and Hump., t. 91, f. 15.

This is perhaps the most frequent form with us.

PYRASTRANA, *Hüb.* The Great Brown.

West. and Hump., t. 80, f. 3; *Stainton*, Manual, vol. ii. p. 204 (*L. rosana*).

Common in gardens and in white-thorn hedges everywhere.

CRATÆGANA, *Hüb.* The Oak Red-bar.

West. and Hump., t. 80, f. 7 (*L. roborana*); *Stainton*, Manual, vol. ii. p. 203.

Common in woods and lanes everywhere in June and July.

XYLOSTEANA, *Linn.* The Forked Red-bar.

West. and Hump., t. 80, f. 6; *Stainton, Manual*, vol. ii. p. 203.

Not common, but generally distributed amongst honey-suckle in hedges and woods, in June and July.

ROSANA, *Linn.* The Glossy Oblique-bar.

West. and Hump., t. 79, f. 28 (*L. lævigana*); *Stainton, Manual*, vol. ii. p. 204.

Captured on the borders of a wood on Redhills, and on Stoke Hill, near Exeter, in June.

TRANSITANA, *Guenée.* The Maple.

West. and Hump., t. 80, f. 12 (*L. acerana*); *Stainton, Manual*, vol. ii. p. 200.

Not common. Taken in Stoke Wood, near Exeter, in June.

HEPARANA, *Schiff.* The Dark Oblique-bar.

West. and Hump., t. 79, f. 19; *Stainton, Manual*, vol. ii. p. 199.

Common, in all our woods and lanes, in June and July.

RIBEANA, *Hüb.* The Common Oblique-bar.

West. and Hump., t. 79, f. 21; *Stainton, Manual*, vol. ii. p. 199.

Generally distributed, and common in gardens, woods, and lanes everywhere in June.

Var. CERASANA, *Hüb.*

The ground-colour of the wings in this is pale yellowish buff, with the faintest possible outlines of markings to be discovered. I have one specimen only captured in the Exeter district.

CORYLANA, *Fab.* The Great Chequered.

West. and Hump., t. 79, f. 26; *Stainton, Manual*, vol. ii. p. 200.

Generally distributed, and common in woods and lanes in June and July.

UNIFASCIANA, *Dup.* The One Bar.

West. and Hump., t. 79, f. 27 (*L. coceana*); *Stainton, Manual*, vol. ii. p. 203.

Common everywhere, in gardens, woods, and lanes, in June.

VIBURNANA, *Schiff.* The Viburnian.

West. and Hump., t. 79, fgs. 12-14, 16; *Stainton, Manual*, vol. ii. p. 198.

This dingy and plain insect has been bred in considerable numbers by Mr. D'Orville. The moth flies in June and July.

VIRIDANA, *Linn.* The Pea-green Tortrix.

West. and Hump., t. 79, f. 10; *Stainton, Manual*, vol. ii. p. 198.

Abundant some seasons in oaks in June; when the branches are beaten the moths fall in a thick shower.

MINISTRANA, *Linn.*

Stainton, Manual, vol. ii. p. 192.

Common, and generally distributed, in woods and lanes in May and June.

ADJUNCTANA, *Treit.* Foster's Tortrix.

West. and Hump., t. 79, f. 17 (*L. Fosterana*); *Stainton, Manual*, vol. ii. p. 199.

The larva of this insect feeds on the fleshy part of ivy leaves, leaving the neuration intact. It draws the edges of the leaf together, so that it lives in a kind of tent; or its more general habit is to spin two leaves together, leaving an opening at each end of the covered way. The moth appears in June and July.

GENUS, *DICHELIA*, *Guenee*.GROTIANA, *Fab.* The Grotian Tortrix.

West. and Hump., t. 80, fgs. 14, 15; *Stainton, Manual*, vol. ii. p. 197.

Not common, but taken occasionally in woods, in the Exeter district, in June.

GENUS, *CENECTRIA*, *Guenee*.PILLERIANA, *Schiff.* Piller's Tortrix.

West. and Hump., t. 79, f. 13; *Stainton, Manual*, vol. ii. p. 197.

Scarce in the Exeter district.

GENUS, *LEPTOGRAMMA*, *Curtis*.LITERANA, *Linn.* The Lettered Tortrix.

West. and Hump., t. 96, f. 12 (*L. irrorana*); *Stainton, Manual*, vol. ii. p. 230.

This beautiful species is not common with us, but may be taken occasionally in woods in July.

SCABRANA, *Steph.* The Rough-winged Tortrix.

West. and Hump., t. 96, f. 9; *Stainton, Manual*, vol. ii. p. 231.

I bred the insect in 1857. Larvæ green, head black, and second segment with a bilobed black patch, the lobes directed backwards. Fed between united leaves of elm September 6th, went into pupa on the 10th, and the moth came out October 8th. See *Entomologist's Intelligencer*, vol. iii. p. 45.

BOSCANA, *Fab.* Bosc's Tortrix.

West. and Hump., t. 96, f. 8 (*A. cerusana*); *Stainton, Manual*, vol. ii. p. 231.

Taken amongst elms in the Exeter district, but not common. The moth is found on the wing in July. Mr. D'Orville remarks (*Ent. Mag.*, 1867, p. 187) "that this moth comes out earlier than *Scabrana*."

GENUS, **PERONEA**, *Curtis*.

FAVILLACEANA, *Hüb.* The Ash-coloured Tortrix.

West. and Hump., t. 94, fgs. 12, 13; *Stainton, Manual*, vol. ii. p. 232.

Not common; in our woods and lanes in September.

RUFANA, *Schiff.* The Red Button.

West. and Hump., t. 95, fgs. 1-3 (vars.); *Stainton, Manual*, vol. ii. p. 232.

Not an abundant species; in woods, gardens, and lanes, where the hedges are tall and thick. There are several strongly-marked varieties that have received names as distinct species, thus :

Var. SEMILANA, *Steph.* The Pale-edged Button.

West. and Hump., t. 95, f. 5.

The colouring in the plate is not nearly bright or pronounced enough. This form in some places is more frequently met with than the one regarded as the type. These appear on the wing in October.

MIXTANA, *Hüb.* The Chestnut.

West. and Hump., t. 98, fgs. 1, 2 (*C. castaneana*); *Stainton, Manual*, vol. ii. p. 230.

Scarce. The only place I have taken this is on Haldon, amongst heath, in April; but Mr. Dale, *in lit.*, says, "Teignmouth and Broad Clist."

SCHALLERIANA, *Linn.* The Shallerian.

West. and Hump., t. 95, fgs. 7, 8; *Stainton, Manual*, vol. ii. p. 231.

Captured in the woods at Dunsford, and at Exeter, in the middle of August.

Var. RUFANA, *Haw.*

The larvæ feed on the leaves of *Viburnum colonoides*, in Messrs. Veitch's nursery. The larva is solitary, one in each leaf; it draws the edges of the leaf together, and undergoes all its transformations in the leaf. The moth comes out the last week in September and first week in October.

*Var. COSTIMACULANA, Steph.**West. and Hump.*, t. 96, f. 1.

Taken among sallows in the Exeter district in September.
Not common.

VARIEGANA, Schiff. The Common Rough-wing.*West. and Hump.*, t. 95, fgs. 9-12 (male and female); *Stainton, Manual*, vol. ii. p. 234.

Generally distributed, and frequent in woods and lanes.
The larva of this is green, and feeds on rose leaves, drawing a pinnule or two together into a kind of tent.
The moth comes out in May. This species, as its name implies, is very variable, especially in the ground-colour of the anterior wings.

One of the most distinct and beautiful varieties is—

Var. ASPERSANA, Fab.

Taken not uncommonly with the species.

CRISTANA, Schiff. The White Button.*West. and Hump.*, t. 93, f. 2 (type); *Stainton, Manual*, vol. ii. p. 233.

Widely distributed, and one of the most variable insects we have. No less than thirty-five varieties have received names, and been described by various authors; but so far I am not aware that all these varieties have been taken in Devon. The following I have in my cabinet.

Var. PROFANANA, Fab. The Rusty Button.*West. and Hump.*, t. 92, f. 1.

Captured in Exeter woods, but not common.

Var. FULVOCRISTANA, Steph. The Tawny-crested Button.*West. and Hump.*, t. 92, f. 11.

One of the most beautiful forms; not uncommon.

Var. FULVOVITTANA, Steph. The Tawny-streaked Button.*West. and Hump.*, t. 92, f. 13.

A very distinct variety, and very beautiful. I have taken one specimen only.

HASTANA, Linn. Hast's Button.*West. and Hump.*, t. 93, fgs. 7-13; *Stainton, Manual*, vol. ii. p. 233.

This is another of those extremely variable species, having no less than twenty recognized forms. It is not, however, so frequent in Devon, so far as my experience goes, as the former. Two varieties are all I have met with; viz.:

Var. RADIANA, Harv. The Buff-edged Button.

West. and Hump., t. 39, fgs. 8, 9.

Not common; found in August and September.

FERRUGANA, Schiff. The Rust-coloured Button.

West. and Hump., t. 96, f. 6 (*A. tripunctulana*); *Stainton, Manual*, vol. ii. p. 236.

Generally distributed in woods and thick lanes in July and August.

TRISTANA, Hüb. The Mournful Button.

West. and Hump., t. 96, fgs. 4, 5 (vars.); *Stainton, Manual*, vol. ii. p. 232.

Not common. Taken in Stoke Wood, near Exeter, in September.

ASPERSANA, Hüb. The Sprinkled Button.

West. and Hump., t. 96, f. 2; *Stainton, Manual*, vol. ii. p. 235.

Rare. Two specimens only have fallen to my lot, both of which are the same variety as figured by Westwood and Humphreys, referred to above. This is found on the wing in July and August.

SHEPHERDANA, Steph.

Stainton, Manual, vol. ii. p. 236.

Rare. Captured in the Exeter district.

GENUS, *TERAS*, *Treitschke*.

CAUDANA, Fab. The Common Notch-wing.

West. and Hump., t. 97, f. 3 (*T. effractana*); *Stainton, Manual*, vol. ii. p. 236.

Generally distributed in woods in the Exeter district. Taken amongst oaks in August and September.

Var. EMARGANA, Fab.

West. and Hump., t. 97, f. 1.

Not common. Taken in similar localities with the species.

CONTAMINANA, Hüb. The Chequered Pebble.

West. and Hump., t. 97, f. 7; *Stainton, Manual*, vol. ii. p. 227.

Frequent in woods and hedges in July. It is liable to great variation. Two of the most permanent varieties are more abundant than the form regarded as the species. Thus:

Var. CILIANA, Hüb. The White-fringed.

West. and Hump., t. 97, f. 8.

Is common in elms and hedges.

Var. RHOMBANA, Haw. The Dark Chequered.

West. and Hump., t. 97, f. 9.

This is also common in similar places to the former.

Var. NIGROMACULATA, Mihi.

Anterior wings yellowish-chestnut, rather thickly dotted with black; no sign of reticulation is shown, nor any costal markings. The dots form on the right wing a series of curved lines; on the left they are irregular. Fringe yellow, immaculate; posterior wings yellowish white, very finely sprinkled with dusky atoms. I am not sure where I captured this insect, nor of the time, as I omitted to number or mark it.

GENUS, **DICTYOPTERYX**, *Stephens.*

LÆFLINGIANA, Linn. The Læfingian.

West. and Hump., t. 97, f. 11; *Stainton, Manual*, vol. ii. p. 227.

Generally distributed in woods and mixed hedges in July.

HOLMIANA, Linn. The Holmian.

West. and Hump., t. 80, fgs. 17-19; *Stainton, Manual*, vol. ii. p. 228.

Widely distributed, and frequent in woods and thick hedges in June and July.

BERGMANNIANA, Linn. The Bergmannian.

West and Hump., t. 98, f. 3; *Stainton, Manual*, vol. ii. p. 228.

Generally distributed, and tolerably abundant in woods and copses in June and July.

FORSKALEANA, Linn. The Forskalian.

West and Hump., t. 97, fgs. 12, 13; *Stainton, Manual*, vol. ii. p. 228.

Not uncommon in woods in July. It seems more attached to elms than any other tree.

GENUS, **ARGYROTOXA**, *Stephens.*

CONWAYANA, Fab. The Conwayian.

West and Hump., t. 98, fgs. 5, 6; *Stainton, Manual*, vol. ii. p. 227.

Beat out of elm hedges in the Exeter district in June. Not common.

GENUS, **PTYCHOLOMA**, *Stephens.*

LEACHEANA, Linn. Dr. Leach's Tortrix.

West and Hump., t. 90, f. 14; *Stainton, Manual*, vol. ii. p. 205.

This is not a common species. I have bred it from larvæ found feeding on the stamens in the apple blossoms before they open. Mr. D'Orville bred it from larvæ found feeding on the willow.

Family, PENTHINIDÆ, *Guenée*.

GENUS, DITULA, *Stephens*.

HARTMANNIANA, *Linn.* The Short-barred White.

West. and Hump., t. 81, f. 10 (*P. scriptana*); *Stainton, Manual*, vol. ii. p. 192.

Not common. In woods in July.

GENUS, PENTHINA, *Troitschke*.

PRUNIANA, *Hüb.* The Lesser Long-cloak.

West. and Hump., t. 81, f. 15; *Stainton, Manual*, vol. ii. p. 194.

Bred from green larvæ feeding in the young shoots of black-thorn; collected in May. The moths came out June 8th to 11th. Common in hedges and woods in June and July. When at rest on the upper surface of leaves they so much resemble the excreta of birds that it is almost impossible to tell whether they are so or not until you touch them. This is probably a protection to them, as this and the next species, which is similarly coloured and has a similar appearance when at rest, are the most abundant of all this genus.

OCHROLEUCANA, *Hüb.* The Common Long-cloak.

West. and Hump., t. 81, f. 14 (*A. tripunctana*); *Stainton, Manual*, vol. ii. p. 194.

Common in woods and hedges everywhere, but not so abundant as the former. It is found on the wing in June and July.

CYNOSBANA, *Linn.* The Black Cloaked.

West. and Hump., t. 82, fgs. 2, 3; *Stainton, Manual*, vol. ii. p. 194.

Not common. Taken in woods and gardens in July.

OCHROMELANA, *Guenée*. The Black and Yellow. *A. dimidiana*.

Stainton, Manual, vol. ii. p. 195.

Rare. Taken in the Exeter district.

MARGINANA, *Haw.* The Bordered Long-cloak.

West. and Hump., t. 81, fgs. 18, 19; *Stainton, Manual*, vol. ii. p. 195.

Rare. I took this in the Exeter district in July, 1865.

Family, SPILONOTIDÆ, *Guenée*.

GENUS, SPILONOTA, *Guenée*.

OCELLANA, *Schiff.* The Cream Short-cloaked.

West. and Hump., t. 82, f. 7 (*S. comitana*); *Stainton, Manual*, vol. ii. p. 219.

Common, and generally distributed in woods and thick hedges.

NEGLECTANA, *Dup.* The Neglected.

Taken by myself in the neighbourhood of Exeter.

SUFFUSANA, *Kuhl.* The Blush-tinted.

West. and Hump., t. 82, f. 6 (*S. trimaculana*); *Stainton, Manual*, vol. ii. p. 206.

Not common. In woods and gardens at the end of June.

ROSÆCOLANA, *Dbd.* The Rose-loving.

Stainton, Manual, vol. ii. p. 206.

Rare. Taken amongst wild roses on Redhills, in the Exeter district.

ROBORANA, *Schiff.* The Brown-cloaked.

West. and Hump., t. 82, figs. 4, 5 (*S. aquana*); *Stainton, Manual*, vol. ii. p. 206.

Generally distributed, but not common. In woods in June and July.

GENUS, *PARDIA*, *Gueneé.*

TRIPUNCTANA, *Schiff.*

West. and Hump., t. 82, f. 2 (?); *Stainton, Manual*, vol. ii. p. 205.

In oak woods and in gardens in May and June.

Family, *SERICORIDÆ*, *Gueneé.*

GENUS, *ASPIS*, *Treitschke.*

UDDMANNIANA, *Linn.* The Uddmannian.

West. and Hump., t. 90, f. 1; *Stainton, Manual*, vol. ii. p. 205.

Generally distributed, but not common; in woods and lanes in June and July.

GENUS, *SERICORIS*, *Treitschke.*

LITTORANA, *Curt.* The Mottled Coast Tortrix.

West. and Hump., t. 88, f. 13; *Stainton, Manual*, vol. ii. p. 264.

Taken at Torquay, and at Ilfracombe and Budleigh Salterton, in July and August (Mr. J. C. Dale).

LACUNANA, *Schiff.* The Silver-dotted.

West. and Hump., t. 89, figs. 5, 6 (*S. micana*); *Stainton, Manual*, vol. ii. p. 262.

Frequent in woods, and generally distributed; appearing on the wing in July.

GENUS, *ORTHOTÆNIA*, *Stephens.*

STRIANA, *Schiff.* The Straight-barred.

West. and Hump., t. 89, f. 2; *Stainton, Manual*, vol. ii. p. 261.

By no means of common occurrence. I took my specimens at Christow, in July, 1858.

Family, SCIAPHILIDÆ, *Guenée*.

GENUS, CNEPHASIA, *Curtis*.

LEPIDANA, *Curt*. The Red-barred Grey.

West. and Hump., t. 89, f. 11; *Stainton, Manual*, vol. ii. p. 263 (*S. politana*).

Rare; captured in the Exeter district.

MUSCULANA, *Hüb*. The Afternoon Tortrix.

West. and Hump., t. 80, f. 13; *Stainton, Manual*, vol. ii. p. 202.

I captured specimens of this rather uncommon species at Exmouth, 6th May, 1862, and I have occasionally taken it at Exeter.

GENUS, SCIAPHILA, *Treitschke*.

NUBILANA, *Hüb*. The Smoky-grey.

West. and Hump., t. 88, fgs. 14, 15; *Stainton, Manual*, vol. ii. p. 259.

Beat out of hedges in the Exeter district in June and July.

SUBJECTANA, *Guenée*. The Borderer.

West. and Hump., t. 88, f. 9 (*C. logiana*); *Stainton, Manual*, vol. ii. p. 257.

Common in hedges and borders of woods in June and July.

VIRGAUREANA, *Treit*. The Golden-rod Tortrix.

West. and Hump., t. 88, f. 8 (*C. interjectana*); *Stainton, Manual*, vol. ii. p. 258.

Rare with us; at least this is my experience. Captured in June and July.

ALTERNANA, *Schiff*. The Alternate.

West. and Hump., t. 88, f. 1 (*C. asinana*); *Stainton, Manual*, vol. ii. p. 258.

Captured in Devonshire, on the authority of Stephens. (See *Haustellata*, vol. iv. p. 129.) The moth flies in the middle of June.

HYBRIDANA, *Hüb*. The Mongrel.

West. and Hump., t. 88, fgs. 11, 12 (male and female); *Stainton, Manual*, vol. ii. p. 257.

Scarce in the Exeter district, appearing on the wing in June and July.

OCTOMACULANA, *Haw*. The Eight-spotted.

Stainton, Manual, vol. ii. p. 258.

Very rare. I captured one specimen only on the coast, between Exmouth and Budleigh Salterton, in August, 1857.

GENUS, **CAPUA**, *Stephens.*OCHRACEANA, *Steph.* The Ochreous.*West. and Hump.*, t. 97, f. 14; *Stainton, Manual*, vol. ii. p. 216.

Beat out of hedges on Redhills, near Exeter, the 9th June. Rather frequent.

Family, **GRAPHOLITHIDÆ**, *Gueneé.*GENUS, **BACTRA**, *Stephens.*LANCEOLANA, *Hüb.* The Lance-wing.*West. and Hump.*, t. 87, fgs. 7-9; *Stainton, Manual*, vol. ii. p. 226.

Taken amongst rushes in the greatest abundance in May and June. One of the commonest insects. This is double-brooded.

Var. PAUPERANA, *Haw.* The Spotted Drab.*West. and Hump.*, t. 87, f. 8.

Captured among rushes in a meadow near Exeter in August; not rare.

FURFURANA, *Haw.**West. and Hump.*, t. 87, f. 10 (*B. fuscana*); *Stainton, Manual*, vol. ii. p. 226.

Captured amongst reeds surrounding Slapton Lea, at the end of June, by Mr. Bentley. Recorded by Westwood and Humphreys, vol. ii. p. 139.

GENUS, **PHOXOPTERYX**, *Treitschke.*SICULANA, *Hüb.* The Hook-tipped Streak.*West. and Hump.*, t. 85, fgs. 6-8; *Stainton, Manual*, vol. ii. p. 225.

Bovey Heathfield; rare; in June.

UNGUICANA, *Linn.* The Claw-winged.*West. and Hump.*, t. 85, f. 5 (*A. fractifasciana*); *Stainton, Manual*, vol. ii. p. 225 (*A. unguicella*).

Rather scarce; on heathy places in May and June.

COMPTANA, *Fro.* The Adorned.*Stainton, Manual*, vol. ii. p. 225.

Very rare. Should be sought for on the chalk about Beer in April and May, and again in August.

LUNDANA, *Fab.* The Lundian.*West. and Hump.*, t. 85, f. 8; *Stainton, Manual*, vol. ii. p. 224.

Not common. Captured on Redhills, May 30th, 1856.

DERASANA, *Hüb.* The Hook-tipped Blotch-back.*West. and Hump.*, t. 85, f. 2 (*A. unculana*); *Stainton, Manual*, vol. ii. p. 225.

This beautiful insect is not common. Taken in June and July.

MITTERPACHERIANA, *Schiff.* The Red Hook-tip.*West. and Hump.*, t. 84, f. 12; *Stainton, Manual*, vol. ii. p. 223.

Beaten out of elms and in woods, but not common, in May and June.

GENUS, *GRAPHOLITHA*, *Treitschke*.NISANA, *Linn.* The Sparrow-Hawk.*West. and Hump.*, t. 84, figs. 5-8; *Stainton, Manual*, vol. ii. p. 207.

Rare. Amongst tallows and poplars in July and August.

CAMPOLILIANA, *Schiff.* The Field Lily.*West. and Hump.*, t. 85, f. 26 (*P. subocellana*); *Stainton, Manual*, vol. ii. p. 207.

Captured in Stoke Wood, June 18th, 1858. Rather common amongst oaks.

TRIMACULANA, *Don.* The Three-spotted.*West. and Hump.*, t. 85, f. 28 (*P. Mitterbacheriana*); *Stainton, Manual*, vol. ii. p. 221.

Taken in Stoke Wood, near Exeter. Frequent.

Var. EXCRUCIANA, Steph.

Not common.

OBTUSANA, *Haw.* The Blunt-wing Blotch-back.*West. and Hump.*, t. 85, f. 1; *Stainton, Manual*, vol. ii. p. 225.

Beat out of oaks on Stoke Hill, near Exeter, on the 9th June, 1868. Rather rare.

NÆVANA, *Hüb.* The Marble Single-dot.*West. and Hump.*, t. 84, f. 3; *Stainton, Manual*, vol. ii. p. 221.Captured at Dunsford, in the oak woods, August 21st, 1862. Tolerably plentiful. I have bred this also from larvæ found feeding on the seeds of *Silene inflata*. The moth came out July, 1861.GEMINANA, *Steph.* The Twins.*Stainton, Manual*, vol. ii. p. 222.Captured in North Devon by the Rev. E. Horton, in June. (*Ent. Ann.*, 1865, p. 114.)GENUS, *PHLÆODES*, *Guend.*IMMUNDANA, *Fisch. and Rösl.**West. and Hump.*, t. 84, f. 4; *Stainton, Manual*, vol. ii. p. 208.

Exeter district, scarce; Stoke Wood September and October.

GENUS, *HYPERMECIA*, *Guenée*.ANGUSTANA, *Hüb.* The Red Cross.*West. and Hump.*, t. 80, f. 16 (*L. cruciana*); *Stainton, Manual*, vol. ii. p. 191.

Bred from larvæ feeding in the young leaves and shoots of willows. Very abundant this year (1878) near Exeter. The moths came out June 8th from larvæ collected in May. A generally-distributed species. In woods and hedges in June and July.

Var. *VIMINANA*, *Guenée*.

This differs from the type in the markings and colouring, being darker and obscure. The fascia is just discernible; the apical castaneous spot alone remains distinct. I bred this from larvæ found feeding on willow in June, 1862.

GENUS, *BATODES*, *Guenée*.ANGUSTIORANA, *Haw.* The Narrow-winged Red Bur.*West. and Hump.*, t. 81, f. 4; *Stainton, Manual*, vol. ii. p. 204.

An abundant species. In woods and hedges in July and August.

GENUS, *PÆDISUA*, *Treitschke*.CORTICANA, *Schiff.* The Marbled Diamond-back.*West. and Hump.*, t. 90, fgs. 7, 8 (*P. communana*); *Stainton, Manual*, vol. ii. p. 238.

Captured in the meadows near the Great Western Railway Station, Exeter, in August. Frequent.

PROFUNDANA, *Schiff.* The Profound.*West. and Hump.*, t. 81, fgs. 5-8 (vars.); *Stainton, Manual*, vol. ii. p. 238.

Taken in Stoke Wood in August, amongst oaks, in considerable numbers.

SOLANDRIANA, *Linn.* Solander's Tortrix.*West. and Hump.*, t. 90, fgs. 2-6; *Stainton, Manual*, vol. ii. p. 209.

Taken in woods in the Exeter district very sparingly.

SEMIFUSCANA, *Dbl.* The Dusky Tortrix.*West. and Hump.*, t. 90, fgs. 9-11 (vars.); *Stainton, Manual*, vol. ii. p. 208.

Not uncommon in damp woods in May and June.

GENUS, *EPHIPPHORA*, *Duponchel*.SCUTULANA, *Schiff.* The Brown-blotch-back.*West. and Hump.*, t. 82, f. 13 (*S. sticticana*); *Stainton, Manual*, vol. ii. p. 212.

Rare. Captured on Redhills; near Exeter, June 9th, 1856.

BRUNNICHIANA, Schiff. The Brunnichian.*West. and Hump.*, t. 82, f. 11; *Stainton, Manual*, vol. ii. p. 212.

Rare, but widely distributed. Very variable in the ground-colour of the wings. Taken June and July.

FCENEANA, Linn. The White Foot.*West. and Hump.*, t. 82, f. 8; *Stainton, Manual*, vol. ii. p. 213.

Taken by Mr. D'Orville near Exeter. It is found on the wing in August.

TURBIDANA, Treit. The Muddy.Figured and described in *Zoologist*, 1848, p. 2034.Captured at Chudleigh by Mr. Stainton, in June, 1850, in some plants of the butterbur (*Petasites vulgaris*). *Ent. Ann.*, 1855, 2nd ed., pp. 51, 52.**GENUS, OLINDIA, Guenée.****ULMANA, Hüb.***West. and Hump.*, t. 99, f. 15 (?); *Stainton, Manual*, vol. ii. p. 239.

Sparsely scattered over the county, in woods and hedges, in June and July.

GENUS, SEMASIA, Guenée.**SPINIANA, Fisch. and Rösl.** The Thorn Tortrix.*West. and Hump.*, t. 83, f. 18; *Stainton, Manual*, vol. ii. p. 241.

Not very common, though generally distributed, appearing on the wing in June.

IANTHIANA, Dupon. The Violet-coloured.*West. and Hump.*, t. 83, f. 24; *Stainton, Manual*, vol. ii. p. 241.

Scarce. Taken in a lane leading from Heavitree to Sandy Gate, in August.

WCEBERIANA, Schiff. The Weberian.*West. and Hump.*, t. 86, fgs. 7-11 (not good); *Stainton, Manual*, vol. ii. p. 241.

Not very common. Captured in orchards and gardens in June and July.

GENUS, COCCYX, Treitschke.**SPLENDIDULANA, Guenée.** The Resplendent.*West. and Hump.*, t. 83, f. 2; *Stainton, Manual*, vol. ii. p. 247 (*Asthenia splendidulana*).

Scarce. Captured in my garden, July, 1864.

ARGYRANA, Hüb. The Silver-striped.*West. and Hump.*, t. 83, f. 4 (*P. atromargana*); *Stainton, Manual*, vol. ii. p. 243.

Common in hedges and the sides of woods in April and May.

TÆDANA, Linn.

Very rare. I captured a male and female amongst fir trees in a small copse on Marypole Head, near Exeter, May 26th, 1878.

HERCYNIANA, Bech. The Ancient German Forest Moth.

West. and Hump., t. 99, fgs. 12-14 (*O. comitana*); *Stainton, Manual*, vol. ii. p. 216.

Not very common; appearing on the wing in June.

USTOMACULANA, Curtis. The Loch Ranoch.

West. and Hump., t. 85, f. 12; *Stainton, Manual*, vol. ii. p. 222

Not common. Taken in woods and lanes in June in the Exeter district.

GENUS, **RETINIA, Guenée.****BUOLIANA, Schiff.** Baron Buol's Tortrix.

West. and Hump., t. 99, fgs. 3, 4; *Stainton, Manual*, vol. ii. p. 247.

The larva is reddish-brown, head and second segment black above, pro-legs black. The body is wrinkled transversely, with a deep depression on each segment, ending in a curve near the spiracular line. These larvæ eat into the young shoots of the *Pinus*, destroying the vitality of the growth, which soon wither and die. They undergo their transformations in the bottom of their mine about the middle of June, and the perfect insect comes out about the second week in July. Some years ago this insect attacked some specimens of *Pinus insignis*, in Messrs. Veitch's nursery at Exeter, in such numbers that the trees were completely disfigured, and spoiled as specimens for the time being. The only means to rid them of the larvæ was to cut off all the shoots attacked and burn them, which was done.

GENUS, **CARPOCAPSA, Treitschke.****SPLENDIDANA, Hüb.** The Splendid.

West. and Hump., t. 86, f. 4; *Stainton, Manual*, vol. ii. p. 252.

Plentiful in the larva state in acorns in some seasons. The moth appears on the wing in June and July.

POMONANA, Linn. The Codling Moth.

West. and Hump., t. 86, f. 2; *Stainton, Manual*, vol. ii. p. 253.

Much too common in some seasons in gardens. About once in six or seven years this insect becomes a great pest, especially in small gardens where there are but few apple trees; in my own, for instance, where I have

but two. One of these appears to be a favourite with the insect, as it is with me, being a good kind of fruit—a pearmain. The larvæ of this moth attack the fruit and feed on the vitals (namely, the seeds) of the apple, and instead of its being left long enough to ripen, it immediately falls to the ground. This moth is therefore one of the most destructive of pests. In some places—for instance, I have been informed at Bicton—at the time when the moth is on the wing, it has been the custom to light fires in heaps of rubbish, to create as much smoke as possible under the trees, so as to stifle these pests; and a very good plan I believe it to be. Another plan suggested to thin the numbers of this moth is, to collect all the fruits that have been attacked by the larvæ, and destroy them. But this can only be done in comparatively isolated gardens; and where large orchards are cultivated, as in Devonshire, it is almost, if not quite, impossible to destroy this enemy to the cultivator of choice fruit. There are two broods of this moth in the year, one appearing in the end of May, and the other in August.

GENUS, **ENDOPSIA**, *Guenée*.

NEBRITANA, *Treit.* The Fawn-coloured.

West. and Hump., t. 83, f. 13; *Stainton, Manual*, vol. ii. p. 261 (*E. nigricana*).

Generally distributed, but not common.

PISANA, *Guenée*. The Pale-brown Striped-edged.

West. and Hump., t. 83, f. 15 (*P. proximana*); *Stainton, Manual*, vol. ii. p. 261.

Taken in Devonshire, on the authority of Westwood and Humphreys, vol. ii. p. 125.

GENUS, **STIGMONOTA**, *Guenée*.

COMPOSANA, *Fab.* The Ornamental Tortrix.

West. and Hump., t. 83, f. 21; *Stainton, Manual*, vol. ii. p. 245 (*S. compositella*).

Not common with us; appearing on the wing in May and in August.

REGIANA, *Zel.* The Regal Tortrix.

West. and Hump., t. 83, f. 19; *Stainton, Manual*, vol. ii. p. 243.

Rare; at least so far as my experience goes. The moth appears in September.

GENUS, **DICHRORAMPHA**, *Gueneé*.**POLITANA**, *Schiff.* The Plain Silver-fringed.*West. and Hump.*, t. 83, f. 9 (*P. simpliciana*); *Stainton, Manual*, vol. ii. p. 214.

Not common. Captured near Exeter in June.

ALPINANA, *Dupon.* The Plain Gold-fringed.*West. and Hump.*, t. 83, fgs. 10, 11; *Stainton, Manual*, vol. ii. p. 214.

Captured amongst tansy in the Exeter district, but not common; appearing in July. Mr. C. T. Crutwell took it in August.

PETIVERANA, *Linn.* The Petiverian.*West. and Hump.*, t. 83, f. 7; *Stainton, Manual*, vol. ii. p. 213.

Generally distributed and tolerably frequent, appearing on the wing in June and July.

FLAVIDORSANA, *Knaggs.* Yellow Blotch-back.*Ent. Ann.*, 1867, pl. 1, f. 5, p. 148.Captured amongst sea wormwood (*Artemisia maritima*) in North Devon by Mr. Meek.**TANACETANA**, *Stain.**Stainton, Manual*, vol. ii. p. 214.

This species was captured by Mr. D'Orville near Exminster, amongst tansy. The insect is on the wing in July.

GENUS, **PYRODES**, *Gueneé*.**RHEEDIANA**, *Linn.* The Rheedian Tortrix.*West. and Hump.*, t. 98, f. 7; *Stainton, Manual*, vol. ii. p. 229.

This pretty little moth is not very uncommon in hedges and the margins of woods in June.

GENUS, **CATOPTRIA**, *Gueneé*.**ULICETANA**, *Haw.* The Furze Moth.*West. and Hump.*, t. 86, f. 13; *Stainton, Manual*, vol. ii. p. 254.

One of the most abundant species. It literally swarms amongst furze bushes in fine seasons, flitting about in the sun about four o'clock in the afternoon in June, and again in August and September.

JULIANA, *Bent.* The July Moth, or Bentley's Marble Tortrix.*West. and Hump.*, t. 86, f. 18; *Stainton, Manual*, vol. ii. p. 262.

Very rare. The moth flies, as its name implies, in July.

HOHENWARTHIANA, Schiff. Hohenworth's Tortrix.

West. and Hump., t. 87, f. 3 (*C. fulvana*); *Stainton, Manual*, vol. ii. p. 210.

Scarce, but found occasionally amongst thistles in July and August.

GENUS, **TRYCHERIS**, Guenée.

MEDIANA, Schiff. The Double Orange-spot.

West. and Hump., t. 83, f. 26 (*P. amana*); *Stainton, Manual*, vol. ii. p. 242.

This pretty little moth is not common, but may be taken occasionally on the flowers of the umbelliferæ, on the margins of woods, in June and July.

Family, **PYRALOIDIDÆ**, Guenée.

GENUS, **SYMETHIS**, Leach.

VIBRANA, Hüb. The Tremulous, or Dancer.

Stainton, Manual, vol. ii. p. 159.

In swarms sometimes in the autumn on the flower-heads of umbelliferæ, flitting about in the most restless manner.

GENUS, **CHOREUTES**, Treitschke.

SCINTILULANA, Hüb. The Dancing Spark.

West. and Hump., t. 76, f. 6 (*S. mylerana*); *Stainton, Manual*, vol. ii. p. 159.

Taken in Devonshire (Messrs. Westwood and Humphreys). It is found on the wing in June, and again in autumn.

GENUS, **XYLOPODA**, Latreille.

FABRICIANA, Linn. The Autumn Nettle-tap.

West. and Hump., t. 76, f. 1; *Stainton, Manual*, vol. ii. p. 158.

Literally swarm sometimes in autumn on flowers of umbelliferæ. It is one of the most active little creatures.

PARIANA, Linn. The Double-barred Nettle-tap.

West. and Hump., t. 76, fgs. 2-5; *Stainton, Manual*, vol. ii. p. 158.

Rare; captured in the Exeter district in June.

Family, **CONCHYLIDÆ**, Guenée.

GENUS, **LOBESIA**, Guenée.

RELIQUANA, Hüb. The Orange and Black.

West. and Hump., t. 100, f. 7 (*E. permixtana*); *Stainton, Manual*, vol. ii. p. 266.

Rare; captured at Fordlands, near Exeter, June 8th, 1865.

GENUS, **EUPECILIA**, Stephens.

ANGUSTANA, Hüb. The Narrow-winged.

West. and Hump., t. 100, f. 4; *Stainton, Manual*, vol. ii. p. 273.

Taken in Stoke Wood, near Exeter, in September, but not plentiful.

CURVISTRIGANA, *Wilk.**Stainton*, Manual, vol. ii. p. 272.

Taken at Barnstaple by Mr. Meek. (See *Entomologist's Magazine*, 1866, p. 116.)

NOTULANA, *Zel.**Stainton*, Manual, vol. ii. p. 273.

Very rare. One specimen only captured in June.

RUPICOLANA, *Curt.* The Chalk-cliff Tortrix.*West. and Hump.*, t. 100, f. 14; *Stainton*, Manual, vol. ii. p. 273.

Also very rare. Taken in Stoke Wood, near Exeter, in June.

GENUS, **XANTHOSSETIA**, *Stephens.*

ZOEAGANA, *Linn.* The Zœgian.*West. and Hump.*, t. 101, f. 11; *Stainton*, Manual, vol. ii. p. 276.

Captured, but rarely, in dry grassy places in the Exeter district, in August.

HAMANA, *Linn.* The Hook-marked Straw.*West. and Hump.*, t. 101, f. 13; *Stainton*, Manual, vol. ii. p. 276.

Frequent in similar places as the former in August.

GENUS, **CHROSIS**, *Guendé.*

TESSERANA, *Schiff.* The Tessellated.*West. and Hump.*, t. 98, fgs. 13, 14; *Stainton*, Manual, vol. ii. p. 268.

Captured in the Exeter district in woods and lanes, and on open downs, but not common, in June.

GENUS, **ARGYROLEPIA**, *Stephens.*

BADIANA, *Hüb.* The Chestnut Straw.*West. and Hump.*, t. 101, f. 9; *Stainton*, Manual, vol. ii. p. 270.

Widely scattered over the county, but not common anywhere, appearing on the wing in June.

GENUS, **CONCHYLIS**, *Troitschko.*

FRANCILLONANA, *Fab.* The Francillianian.*West. and Hump.*, t. 101, f. 8; *Stainton*, Manual, vol. ii. p. 275.

Bred from larvæ found at Wonford (came out July 6th to 12th), and also beat from hedges round Exeter.

INOPIANA, *Haw.* The Plain Drab.*West. and Hump.*, t. 91, f. 15; *Stainton*, Manual, vol. ii. p. 213.

Very rare. Captured in Stoke Wood July 2nd, 1856.

GENUS, *TORTRICODES*, *Gueneé*.HYEMANA, *Hüb.* The Winter Tortrix.*West. and Hump.*, t. 110, figs. 4, 6; *Stainton, Manual*, vol. ii. p. 278.

Very common in woods amongst oaks in February and March, flitting about in the daytime in the sun.

Section, *TINEÆ*.Family, *EPIGRAPHIIDÆ*, *Gueneé*.GENUS, *LEMNATOPHILA*, *Troitschke*.PHRYGANELLA, *Hüb.* The Drab Day.*West. and Hump.*, t. 110, figs. 8, 12; *Stainton, Manual*, vol. ii. p. 282.

Stoke Wood; rare.

GENUS, *DIURNEA*, *Haworth*.FAGELLA, *Schiff.* The March Dagger.*West. and Hump.*, t. 110, figs. 9, 11; *Stainton, Manual*, vol. ii. p. 282.

Very common in Stoke and other woods in the county at the end of March and beginning of April.

Family, *PSYCHIDÆ*, *Bruand*.GENUS, *TALEPORIA*, *Zeller*.PUBICORNELLA, *Haw.* The Downy-horned.*West. and Hump.*, t. 110, f. 3 (P); *Stainton, Manual*, vol. ii. p. 285.

Rare. Captured at Coaver, near Exeter, in May.

PSEUDO-BOMBYCELLA, *Hüb.* The Bombyx-like.*West. and Hump.*, t. 110, figs. 1, 2 (P); *Stainton, Manual*, vol. ii. p. 285.

Rare. Taken at Coaver, May 28th, 1866. Larva cases on palings at Dunsford.

GENUS, *PSYCHE*, *Schrank*.RETICELLA, *New*.*Stainton, Manual*, vol. i. p. 167.

Very rare. Captured on the coast.

ROBORICOLELLA, *Bru.**West. and Hump.*, t. 16, f. 10; *Stainton, Manual*, vol. i. p. 167 (*Fumosa nitidella*).

Common on brambles and long grass stems, especially in a lane in the Wonford Marshes, near Exeter; and it is found not uncommonly at Plymouth, on Staddon Heights. The larva may always be known by its case being made up, or rather coated with bits of grass stems, placed longitudinally. The moth comes out in June.

VILLOSELLA, *Och.**Stainton, Manual*, vol. i. p. 166 (*P. nigricans*).

Larvæ in a very long toughish case on lichen-covered rails, &c. Very rare. The moth comes out in June.

Family, *TINEIDÆ*, *Stainton*.
GENUS, *XYMASTODOMA*, *Zeller*.

MELANELLA, *Haw.* The White-spotted Black.

West. and Hump., t. 120, f. 6; *Stainton*, Manual, vol. ii. p. 287.

Very rare. One specimen only captured July 8th, 1856,
on the Topsham Road, near Exeter.

GENUS, *TINEA*, *Linnaeus*.

FERRUGINELLA, *Hüb.* The White-backed Black.

West. and Hump., t. 98, f. 7 (*T. ustella*); *Stainton*, Manual, vol. ii. p. 289.

Common. Captured in houses, stables, &c., in May. Mr.
D'Orville took what must be a second brood in July, at
Alphington.

RUSTICELLA, *Hüb.*

West. and Hump., p. 246 (not figured); *Stainton*, Manual, vol. ii. p. 290.

Frequent. Taken at Exmouth towards the end of May.

TAPETIELLA, *Linn.* The Black-cloaked Woollen.

West. and Hump., t. 98, f. 5; *Stainton*, Manual, vol. ii. p. 290.

Taken in the coach-house at Coaver, Exeter, July 8th, 1864,
and in my house at the Institution.

GRANELLA, *Linn.* The Mottled Woollen.

West. and Hump., t. 98, f. 18; *Stainton*, Manual, vol. ii. p. 291.

Common in stables and granaries everywhere in June.

CLOACELLA, *Haw.* The Dark Mottled Woollen.

West. and Hump., t. 118, f. 17; *Stainton*, Manual, vol. ii. p. 291.

Much too common in houses, and in the linings of carriages,
in July.

RURICOLELLA, *Stain.* The Country Tinea.

Stainton, Manual, vol. ii. p. 292.

Common in the Exeter district in June.

PELLIONELLA, *Linn.* The Single-spotted Woollen.

West. and Hump., t. 118, f. 10; *Stainton*, Manual, vol. ii. p. 292.

In my house at the Institution, and bred from larvæ
feeding on an old dog skin. The imago came out July
8th, 1856. The larvæ cases are spindle-shaped, dark
brown or black, and open at each end, the edges of
which are turned back or reflected, so as to make them
somewhat trumpet-mouthed.

FUSCIPUNCTELLA, *Haw.* The Brown-dotted Woollen.

West. and Hump., t. 118, f. 9; *Stainton*, Manual, vol. ii. p. 292.

Abundant sometimes in stables and out-houses in June.
They literally swarmed in the stables at Coaver, near
Exeter, in June, 1853.

LAPPELLA, *Hüb.* The Triple-spotted Yellow.

West. and Hump., t. 118, f. 14; *Stainton*, Manual, vol. ii. p. 293.

Beaten out of ivy and lichen-covered rock on the Cowley
Bridge Road in June, 1857.

BISELLIELLA, *Hum.* The Destructive.

West. and Hump., t. 118, f. 16 (*P. destructor*); *Stainton*, Manual, vol. ii.
p. 293.

Taken by the Rev. J. Hellins in his house in August, 1869.

NIGRIPUNCTELLA, *Haw.* The Many-spotted Yellow.

West. and Hump., t. 118, f. 11; *Stainton*, Manual, vol. ii. p. 294.

Scarce. Captured in the hot-house at Coaver, Exeter, in
May, and taken also on Redhills, by sweeping grass, &c.,
July 2nd, 1863.

SEMIFULVELLA, *Haw.* The Fulvous Tip.

West. and Hump., t. 118, f. 6; *Stainton*, Manual, vol. ii. p. 294.

Very rare. Captured in the Exeter district. The moth
flies in June.

GENUS, **LAMPRONIA**, *Zeller.*

QUADRIPUNCTELLA, *Fab.* The Double-spotted Brown.

West. and Hump., t. 119, f. 12; *Stainton*, Manual, vol. ii. p. 295.

Captured in the garden at Coaver House, June 2nd, 1857,
but very scarce.

LUZELLA, *Hüb.* The four-spotted Brown.

West. and Hump., t. 120, f. 3 (*L. flavipunctella*); *Stainton*, Manual,
vol. ii. p. 295.

Taken by Dr. Jordan at Teignmouth, and by myself at
Exeter, in June.

PRÆLATELLA, *Schiff.*

Stainton, Manual, vol. ii. p. 296.

Taken in Stoke Wood, by sweeping amongst wild straw-
berries, grass, &c., June 18th, 1858.

RUBIELLA, *Bjk.* The Golden-speckled Black.

West. and Hump., t. 120, f. 8; *Stainton*, Manual, vol. ii. p. 296.

Common, some seasons, in plantations of raspberry. The
larva of this pretty moth is called the "red grub" of the

raspberry. It feeds in the buds of this plant, and when numerous destroys the crop. When full-fed it comes out of the bud, and draws the edges of a pinnule of a leaf together, in which it goes into chrysalis. It remains in this state nearly a month. Before the moth emerges the chrysalis is forced to the edge of the leaf, and then the moth makes its escape. May, 1855.

GENUS, **LAMPROSETIA**, *Stainton*.

VERHUELLA, *V. H.*

Stainton, Manual, vol. ii. p. 296 (*Teichobia verhuella*).

Beat out of hedges at Bideford, and also in the Exeter district, in July; not common. The larva feeds in a case on *Asplenium trichomanes* and *Ruta muraria*.

GENUS, **INCURVARIA**, *Haworth*.

MUSCALELLA, *Fab.* The Feathered Diamond-back.

Nat. Hist. Tin., vol. xiii. pl. 2, f. 1; *West. and Hump.*, t. 119, f. 5; *Stainton*, Manual, vol. ii. p. 297.

Captured whilst flying in the hot sunshine by a hedge side, on May 10th, 1856, in the Exeter district.

PECTINEA, *Haw.* The Feathered Twin-spot.

Nat. Hist. Tin., vol. xiii. pl. 2, f. 2; *West. and Hump.*, t. 119, f. 6; *Stainton*, Manual, vol. ii. p. 297.

Rare. Captured in the neighbourhood of Exeter in August, 1856.

OEHLMANNIELLA, *Hüb.* Oehlmann's.

West. and Hump., t. 119, f. 7; *Stainton*, Manual, vol. ii. p. 297.

Very scarce. Captured in June.

GENUS, **MICROPTERYX**, *Zeller*.

CALTHELLA, *Linn.* The Small Gold.

West. and Hump., t. 120, f. 17; *Stainton*, Manual, vol. ii. p. 302.

Common in the drive in Fordlands Woods, near Ide, and also in various parts of the county, in May and June, flying in the sunshine.

SEPPELLA, *Fab.* Sepp's Moth.

West. and Hump., t. 120, f. 19; *Stainton*, Manual, vol. ii. p. 303.

At Fordlands, flitting about among brambles and long grass in the sun, in June.

MANSUETELLA, *Zel.*

Stainton, Manual, vol. ii. p. 303.

Not common. Captured at Exwick, near Exeter, June, 1869.

THUNBERGELLA, Fab. Thunberg's.*West. and Hump.*, t. 122, f. 15; *Stainton, Manual*, vol. ii. p. 303.Common in Stoke Wood; beat out of oaks and crab-trees,
May 12th, 1857.**PURPURELLA, Haw.** The Red-gold.*West. and Hump.*, t. 120, f. 14; *Stainton, Manual*, vol. ii. p. 303.Taken at Fordlands, by sweeping birch-twigs, April 10th,
1857. Not common.**SPARMANNELLA, Bosc.** The Sparmannian.*West. and Hump.*, t. 120, f. 13; *Stainton, Manual*, vol. ii. p. 304.Taken in a meadow at the further end of Fordlands, May
3rd, 1857.**SUBPURPURELLA, Haw.** The Half-purplish Underwing.*Nat. Hist. Tin.*, vol. xiii. pl. 3, f. 1; *West. and Hump.*, t. 120, f. 10;
Stainton, Manual, vol. ii. p. 304.

Captured in Stoke Wood, May 12th, 1857, in abundance.

GENUS, **NEMOPHORA, Hübner.****SWAMMERDAMMELLA, Linn.** The Swammerdamian.*West. and Hump.*, t. 109, f. 14; *Stainton, Manual*, vol. ii. p. 298.Not common. Captured on Redhills, on May 25th, flying
round oaks in the daytime.**SCHWARZIELLA, Zel.** Swartz's Longhorn.*West. and Hump.*, t. 109, f. 15 (*A. panzerella*); *Stainton, Manual*, vol.
ii. p. 298.Abundant; flying round oaks in the daytime, dancing up
and down like gnats, in Stoke Wood and other places in
the Exeter district, May 22nd, 1857. The males of this
insect have the wings darker, and occasionally a female
may be found of the same colour, which would almost
lead one to suspect another species.**METAXELLA, Hüb.** The Pale-brown Longhorn.*West. and Hump.*, t. 109, f. 16 (*A. robertella*); *Stainton, Manual*, vol.
ii. p. 298.Not common. Captured at Fordlands and Stoke Wood
in May.GENUS, **ADELA, Latreille.****FIBULELLA, Schiff.** The Clasp.*Nat. Hist. Tin.*, vol. xiii. pl. 4, f. 1; *West. and Hump.*, t. 109, f. 7, (*A.*
Latreilla); *Stainton, Manual*, vol. ii. p. 299.Taken at Fordlands in May and June, flying in the day-
time amongst brambles, &c., but rare.

RUFIMITRELLA, Scop. The Red Turbaned.

Nat. Hist. Tin., vol. xiii. pl. 4, f. 2; *Stainton, Manual*, vol. ii. p. 299.

Not very common. Captured in Stoke Wood, flying round oaks in May.

SULZERIELLA, Schiff. The Sulzian.

West. and Hump., t. 109, f. 8; *Stainton, Manual*, vol. ii. p. 300.

Not common, but taken occasionally in woods at Exeter in June.

DE GEERELLA, Linn. The Degeerian.

West. and Hump., t. 109, f. 9; *Stainton, Manual*, vol. ii. p. 300.

Scarce, but taken occasionally in the oak woods at Dunsford in June.

VIRIDELLA, Scop. The Green Longhorn.

West. and Hump., t. 109, f. 12; *Stainton, Manual*, vol. ii. p. 300.

Common in all the woods at Exeter in May and June, flying amongst oaks in the daytime.

Family, HYPONOMEUTIDÆ, *Stainton*.

GENUS, SWAMMERDAMMIA, *Stainton*.

APICELLA, Don.

COMPTELLA, Hüb. } The Peacock's Feather.

West. and Hump., t. 111, f. 5; *Stainton, Manual*, vol. ii. p. 305.

Bred from larvæ feeding on plum leaves in the garden at Coaver, Exeter, May 13th, 1856.

CÆSIELLA, Hüb. The Slight Barred.

Nat. Hist. Tin., vol. xi. pl. 2, f. 2; *West. and Hump.*, t. 111, f. 7 (*T. subfasciella*); *Stainton, Manual*, vol. ii. p. 306.

Common on white-thorn hedges in the Exeter district in June and August.

GRISEOCAPITELLA, Stain. The Grey-headed.

Nat. Hist. Tin., vol. xi. pl. 2, f. 1; *Stainton, Manual*, vol. ii. p. 306.

Bred from a small green caterpillar feeding on rose leaves in the hot-house at Coaver, near Exeter. The moth came out April 8th, 1856. Mr. Stainton in *Manual* says, feeds "on birch."

Var. PRUNI, Stainton.

Larva green, with a dorsal and two sub-dorsal lines of brilliant carmine spots. Head and pro-legs black. Feeds on the plum leaves, drawing the edges of the leaves together. The larvæ are exceedingly active, and come

running out on the slightest alarm. The perfect insects emerged from the pupa on July 29th, 1857. This insect is darker, with a decided purple hue spread over the wings, rendering the markings somewhat more obscure than in the species. I first sent the larva to Mr. Stainton, who then considered it distinct, but afterwards regarded it as a variety only.

LUTAREA, Haw. The Yellowish Ermine.

West. and Hump., t. 111, f. 6; *Stainton, Manual*, vol. ii. p. 306.

Very scarce. Taken in Stoke Wood, July, 1869.

PYRELLA, Villers. The purple-edged.

Nat. Hist. Tin., vol. xi. pl. 2, f. 3; *West. and Hump.*, t. 111, f. 6 (bad); *Stainton, Manual*, vol. ii. p. 306.

Frequent. Captured flying in the hot sun, by a hedge-side near Exeter, May 10th, 1856; also at Dunsford, on the 6th June, 1862.

GENUS, **SCYTHROPIA**, *Stainton*.

CRATÆGELLA, Linn. The White-thorn Bar.

West. and Hump., t. 111, f. 3; *Stainton, Manual*, vol. ii. p. 307.

Not common. Captured in the Exeter district in July.

GENUS, **HYPONOMEUTA**, *Latreille*.

PLUMBELLUS, Schiff. The Kent Ermine.

West. and Hump., t. 110, f. 25; *Stainton, Manual*, vol. ii. p. 307.

Taken by Mr. D'Orville, and bred by myself from larvæ obtained in Fordlands, near Exeter, in July. The larva is yellowish, with two lateral lines of black dots; feeds, under a thick web, on *Euonymus Europæus*.

PADELLUS, Linn. The Common Ermine.

West. and Hump., t. 110, f. 24; *Stainton, Manual*, vol. ii. p. 308.

Bred from bluish-green larvæ, with head and transverse patch on second segment black, dorsal, sub-dorsal, and lateral lines black, the spiracles dotted, and a transverse patch on the anal segment black. Gregarious; feeds under a web on white-thorn in the early part of June. The moths come out in July.

GENUS, **PRAYS**, *Stainton*.

CURTISELLUS, Don. The Curtisian.

Nat. Hist. Tin., vol. xi. pl. 1, f. 1; *West. and Hump.*, t. 111, f. 1; *Stainton, Manual*, vol. ii. p. 310.

Not uncommon in woods among ash trees, in the buds of which the larvæ feed. Fordlands and Stoke Woods,

Dunsford, &c., in June and July. A dark variety is not rare in which the wings are suffused with dark or blackish-brown, and the markings are almost, and in some entirely, obliterated. This is the *Recurvaria rustica* (Haworth).

Family, **PLUTELLIDÆ**, Stainton.

GENUS, **PLUTELLA**, Schrank.

CRUCIFERARUM, *Zel.* The Annulated.

West. and Hump., t. 118, f. 2 (*C. annulatella*); *Stainton, Manual*, vol. ii. p. 312.

Common amongst charlock and other wild cruciferous plants, on which the larvæ feed, in May, and again in August.

PORRECTELLA, *Linn.* The Grey Streak.

West. and Hump., t. 118, f. 1; *Stainton, Manual*, vol. ii. p. 312.

Not common. The larvæ of this moth must feed upon something else besides *Hesperis matronales*, as this plant is not a native of Devonshire, and the moth is found here in June and July.

GENUS, **CEROSTOMA**, Latreille.

SEQUELLA, *Clk.* The Small Marvel-du-Jour.

West. and Hump., t. 117, f. 23 (very poor); *Stainton, Manual*, vol. ii. p. 313.

One of the most beautiful of our native insects, and, so far as my experience goes, as rare as it is beautiful. I took one specimen by the old quarry in the lane leading from St. Thomas, Exeter, to Redhills, July 12th, 1857.

VITTELLA, *Linn.* The Black Back.

West. and Hump., t. 117, fgs. 21, 22; *Stainton, Manual*, vol. ii. p. 313.

Frequent in woods and wooded lanes; generally distributed, appearing in July and August. I have a variety of a creamy-yellow, very slightly suffused with dusky atoms towards the apices of the wings, and without any markings whatever. This was kindly examined for me by Mr. Stainton, who pronounced it a variety of the above species. I took this in Stoke Wood, July 3rd, 1857.

RADIATELLA, *Don.* The Radiated.

West. and Hump., t. 117, f. 16; *Stainton, Manual*, vol. ii. p. 313.

Common in all our woods in July and August.

Var. QUINQUEPUNCTATUS, Haw.

This is almost as common as the species, and is found in the same places and at the same time.

COSTELLA, *Fab.* The White-shouldered.

West. and Hump., t. 117, f. 14; *Stainton, Manual*, vol. ii. p. 314.

Common in woods, and generally distributed, in July and September.

SYLVELLA, *Linn.* The Wood Autumn.

West. and Hump., t. 117, f. 19; *Stainton, Manual*, vol. ii. p. 314.

Not common, but widely distributed in our woods in August and September.

ALPELLA, *Schiff.* The Double-barred.

West. and Hump., t. 117, f. 13 (*H. persicella*); *Stainton, Manual*, vol. ii. p. 314.

Rare. Captured at Dunsford in August.

LUCELLA, *Fab.* The Netted Hook-tip.

West. and Hump., t. 117, f. 12 (*H. antennella*); *Stainton, Manual*, vol. ii. p. 314.

Not common. In woods and copses in various parts of the county in July.

SCABRELLA, *Linn.* The Wainscot Hook-tip.

West. and Hump., t. 117, f. 10; *Stainton, Manual*, vol. ii. p. 314.

Rare. Taken in Stoke Wood in July.

NEMORELLA, *Linn.* The Pale Hook-tip Veneer.

West. and Hump., t. 117, f. 7; *Stainton, Manual*, vol. ii. p. 315.

Rare. Captured in Dunsford Woods in June.

XYLOSTELLA, *Linn.* The Tooth-streak Hook-tip.

West. and Hump., t. 117, f. 8 (*H. dentella*); *Stainton, Manual*, vol. ii. p. 315.

Common; the larvæ feed on honeysuckle. The moth appears in July and August. Abundant this year (1878) in the furze-brake, Stoke Wood, Exeter.

GENUS, **THERISTIS**, *Stainton*.CAUDELLA, *Linn.* The Narrow-winged Veneer.

West. and Hump., t. 117, f. 6; *Stainton, Manual*, vol. ii. p. 315; *Stephens*, t. 40, f. 1.

Not uncommon. Mr. D'Orville used to take this moth in his garden at Alphington frequently in autumn. I have

taken it in Stoke Wood, on the 30th April, apparently quite fresh from the pupa. There are probably two broods in the year.

Family, *GELECHIIDÆ*, *Stainton*.

GENUS, *ORTHOTELIA*, *Stephens*.

SPARGANELLA, *Wen.* The Dark-veined Long-winged.

West. and Hump., t. 102 (*O. venosa*); *Stainton*, Manual, vol. ii. p. 318.

Not common in the imago state, though frequently found in the larva. The moth appears in July and August.

GENUS, *HENICOSTOMA*, *Stephens*.

LOBELLA, *Schiff.* The Thunbergian.

Nat. Hist. Tin., vol. xiii. pl. 7, f. 2; *West. and Hump.*, t. 109, f. 3 (*L. Thunbergiana*); *Stainton*, Manual, vol. ii. p. 319.

Rare. Taken by beating ivy hanging over a moss and lichen-covered wall on the Cowley Bridge Road, June 13th, 1862.

GENUS, *PHIBALOCERA*, *Stephens*.

QUERCANA, *Fab.* The Long-horned.

Nat. Hist. Tin., vol. xiii. pl. 7, f. 1; *West. and Hump.*, t. 101, f. 17; *Stainton*, Manual, vol. ii. p. 319.

Generally distributed in our oak woods, and common, in July and August.

GENUS, *DEPRESSARIA*, *Haworth*.

COSTOSA, *Haw.* The Dingy Straw.

West. and Hump., t. 103, f. 4 (bad); *Stainton*, Manual, vol. ii. p. 320.

Frequent. Bred from larvæ found in the furze-brake in Stoke Wood. I have also taken the moth at Exeter in the middle of July.

UMBELLANA, *Steph.* The Large Streaked.

Nat. Hist. Tin., vol. vi. pl. 1, f. 3; *West. and Hump.*, t. 102, f. 3; *Stainton*, Manual, vol. ii. p. 321.

Taken in the Exeter district, but not common, in August and September.

ASSIMILELLA, *Treit.* The Dusky Flat-body.

Nat. Hist. Tin., vol. vi. pl. 1, f. 1; *West. and Hump.*, t. 103, f. 6 (*A. irrorella*); *Stainton*, Manual, vol. ii. p. 321.

Captured in the Exeter district in August; not common.

NANATELLA, *Stainton*. The Dwarf.

Nat. Hist. Tin., vol. vi. pl. 1, f. 2; *Stainton*, Manual, vol. ii. p. 321.

Mr. Stainton noticed this species at Torquay.

PROPINQUELLA, Treit. The Resemblance.*West. and Hump.*, t. 103, f. 14; *Stainton, Manual*, vol. ii. p. 322.

Beaten out of thatch in the old summer-house at Fordlands.
Taken also at Exeter in August; not common.

ALSTROEMERIANA, Cllk. The Alstroemerian.*Nat. Hist. Tin.*, vol. vi. pl. 8, f. 2; *West. and Hump.*, t. 103, f. 5; *Stainton, Manual*, vol. ii. p. 323.

Common. There is one spot—on the high hedge-bank opposite the farm on the Cowley Bridge Road—where this species generally appears in March in considerable numbers, flitting about the bushes and plants of hemlock (*Conium maculatum*). This year (1878) they appeared in great numbers in hedges all round Exeter on April 15th and September.

PURPUREA, Haw. The Lesser Purple.*West. and Hump.*, t. 103, f. 9; *Stainton, Manual*, vol. ii. p. 233.

Beaten out of thatch of an old summer-house at Fordlands, May 3rd, 1857, and brushed out of sallows in Stoke Wood in August.

OCELLANA, Fab. The Red Letter.*West. and Hump.*, t. 102, f. 14; *Stainton, Manual*, vol. ii. p. 324.

Captured on sallows, near Exeter, in September, but not common.

YEATESIANA, Fab. The Brown-veined.*West. and Hump.*, t. 103, f. 2 (*D. putridella*); *Stainton, Manual*, vol. ii. p. 324.

Not common; captured in the Exeter district in September.

APPLANA, Fab. The Common Flat-body.*Nat. Hist. Tin.*, vol. vi. pl. 8, f. 3; *West. and Hump.*, t. 103, f. 1; *Stainton, Manual*, vol. ii. p. 325.

Captured in Stoke Wood, April 1st, 1863; not common.

CILIELLA, Stain.*Stainton, Manual*, vol. ii. p. 325.

Captured in the Exeter district; not uncommon in September.

PIMPINELLÆ, Zel. The Lesser Flat-body.*Nat. Hist. Tin.*, vol. vi. pl. 4, f. 2; *West. and Hump.*, t. 102, f. 8 (*D. characterosa*); *Stainton, Manual*, vol. ii. p. 326.

Taken at Bickleigh by Mr. Reading in July.

ALBIPUNCTELLA. *Hüb.* The Rufous Brindled.

Nat. Hist. Tin., vol. vi. pl. 7, f. 1; *West. and Hump.*, t. 103, f. 10;
Stainton, Manual, vol. ii. p. 326.

Taken by Mr. D'Orville at Alphington (plentiful), and by Mr. Longstaff (*Ent. Mag.*, 1867, p. 133-4), in July and August.

CHÆROPHYLLI, *Zel.* The Cow-parsley Moth.

Nat. Hist. Tin., vol. vi. pl. 4, f. 1; *Stainton*, Manual, vol. ii. p. 327.

Captured in the Exeter district in May; frequent.

ULTIMELLA, *Stain.*

Stainton, Manual, vol. ii. p. 327.

Rare. Taken in June in the Exeter district.

NERVOSA, *Haw.* The Coarse Wainscot.

West. and Hump., t. 102, f. 5; *Stainton*, Manual, vol. ii. p. 327.

Taken at Dawlish by Dr. Jordan, and by myself in the Exeter district. The larvæ feed on *Enanthe crocata*.

BADIELLA, *Hüb.* The Chestnut-coloured.

West. and Hump., t. 102, f. 7; *Stainton*, Manual, vol. ii. p. 328.

Taken at Bideford by Mr. Longstaff (*Ent. Mag.*, 1867, p. 133-4).

HERACLEANA, *De Geer.* The Cow-parsnip Moth.

Nat. Hist. Tin., vol. vi. pl. 3, f. 2; *West. and Hump.*, t. 102, f. 2;
Stainton, Manual, vol. ii. p. 328.

Bred. Larva yellowish, with a broad blue dorsal line. Head, a patch on second segment, and legs black; medial legs blue, with a black spot above each. There are ten lines of black dots along the body, the two sub-dorsal the largest. This larva lives on the heads of flowers of herachleum and parsnip. It spins up a thick web, each one living under its own. When full-fed it descends the plant to one of the lower nodes at the base of one of the sheathing leaves, where it eats a hole through the stem, in the hollow of which it undergoes its transformation. Went into pupa August 3rd, 1858; came out August 16th. This larva is very subject to the attacks of a small ichneumon; were it not for this the species would be common.

GENUS, **GELECHIA**. *Zeller.***RUFESCENS**, *Haw.* The Dwarf Wainscot.

Nat. Hist. Tin., vol. ix. pl. 1, f. 2; *West. and Hump.*, t. 108, f. 5;
Stainton, Manual, vol. ii. p. 329.

Rare. Captured in August at Fordlands.

- VILELLA, *Zel.**Stainton, Manual, vol. ii. p. 329.*

Bred by the Rev. J. Hellins from larvæ brought in some moss for other caterpillars in his breeding cages. I have captured several on Redhills. May 25th.

VELOCELLA, *Tis.* The Swift-flier.*West. and Hump., t. 114, f. 9 (A. nebulæ); Stainton, Manual, vol. ii. p. 331.*

Rare. Taken by sweeping on Exmouth Warren, May 4th, 1857.

DIFFINIS, *Haw.* The Greater Brindled-brown.*West. and Hump., t. 105, f. 2; Stainton, Manual, vol. ii. p. 333.*

Not uncommon on Exmouth Warren, where they flit about by day amongst short grass and lichens. It is very difficult to see this insect when it settles on the ground, it is so near the colour of the sand. Taken June 12th.

TERELLA, *Schiff.* The Subcinereous.*West. and Hump., t. 104, fgs. 15, 16; Stainton, Manual, vol. ii. p. 333.*

Common everywhere amongst grass, but more especially where it is short, in June and July.

DESERTELLA, *Edl.* The Desert Moth.*Stainton, Manual, vol. ii. p. 333.*

Scarce. Taken by sweeping along the ground on Exmouth Warren, September 1st, 1857.

ACUMINATELLA, *Sircom.* The Pointed Wing.*Nat. Hist. Tin., vol. ix. pl. 4, f. 2; Stainton, Manual, vol. ii. p. 333.*

Taken by Mr. Stainton at Dawlish, among thistles, in May and in August.

ARTEMISIELLA, *Tis.* The Wormwood Moth.*Nat. Hist. Tin., vol. ix. pl. 7, f. 1; Stainton, Manual, vol. ii. p.*

Captured by Mr. Stainton on Dawlish Warren, amongst wild thyme, in June.

AFFINIS, *Haw.* The Brindled-brown.*Nat. Hist. Tin., vol. ix. pl. 5, f. 2; Stainton, Manual, vol. ii. p. 334.*

Frequent on the moss and lichen-covered rock at Exwick, and other places where these plants grow. June 13th.

DOMESTICA, Haw. The Domestic.

Nat. Hist. Tin., vol. ix. pl. 5, f. 1; *West. and Hump.*, t. 104, f. 23;
Stainton, Manual, vol. ii. p. 335.

Captured amongst mosses and lichens on walls in the Exeter district. Very frequent in June (13th).

RHOMBELLA, Hüb. The Black-speckled Grey.

West. and Hump., t. 114, f. 11 (♀); *Stainton, Manual*, vol. ii. p. 335.

Captured in Stoke Wood, June 18th.

HUMERALIS, Zel. The Shoulder-stripe.

West. and Hump., t. 116, f. 10 (*A. Lyellella*); *Stainton, Manual*, vol. ii. p. 336.

Scarce. Captured at Dunsford, August 21st, 1862. I have a variety of this so much suffused with nearly black scales that the only distinguishing mark left is the basal streak to identify it.

VULGELLA, Hüb. The Rough.

Nat. Hist. Tin., vol. ix. pl. 5, f. 3; *West. and Hump.*, t. 104, f. 22;
Stainton, Manual, vol. ii. p. 336.

Beat out of a hedge on the Old Stoke Road, near the wood, on July 1st, 1862.

SCRIPTELLA, Hüb. The Horse-shoe.

Nat. Hist. Tin., vol. ix. pl. 6, f. 1; *West. and Hump.*, t. 106, f. 9
(*A. trimella*); *Stainton, Manual*, vol. ii. p. 336.

Beaten out of maples. Not common in Devon, so far as my experience goes; but in the neighbourhood of Taunton common in May and June.

CELERELLA, Dgl. The Swift-flier.

Stainton, Manual, vol. ii. p. 237.

Captured on Exmouth Warren, September 1st, 1857. Very scarce. This species flits along the surface of the ground a yard or two at a time, and takes refuge wherever it can under the edges of the dry excreta of cows, &c.

MACULEA, Haw. The Black-dotted White.

Nat. Hist. Tin., vol. x. pl. 10, f. 1; *West. and Hump.*, t. 107, f. 1;
Stainton, Manual, vol. ii. p. 338.

Bred from larvæ feeding on the seeds of *Stellaria holostea*. The larva is yellow, with head and second segment above black. The moths come out from July 13th to 22nd.

TRICOLORELLA, Haw. The Tricoloured.

Nat. Hist. Tin., vol. x. pl. 10, f. 2; *West. and Hump.*, t. 105, f. 10;
Stainton, Manual, vol. ii. p. 338.

Captured near Ide, August 17th, in some numbers. The larva is very pretty; body white with a dorsal, sub-dorsal and lateral lines carmine. The sub-dorsal is made up of a series of oblique stripes. Head, and two round spots on the second segment, black. It feeds on the unexpanded heads and flower-buds of *Stellaria holostea*.

VISCARIELLA, Logan. The Rock Lychnis Moth.

Nat. Hist. Tin., vol. x. pl. 10, f. 3.

Mr. Stainton says, page 120, "I believe I have found the larvæ near Bideford."

FRATERNELLA, Dgl.

Nat. Hist. Tin., vol. x. pl. 10, f. 3; *Stainton, Manual*, vol. ii. p. 338.

Rare. Captured on the cliffs at Plymouth, August 12th, 1857.

MACULIFERELLA, Mann. The Light-brindled Brown.

Nat. Hist. Tin., vol. x. pl. 12, f. 1; *West. and Hump.*, t. 105, f. 7;
Stainton, Manual, vol. ii. p. 338.

Captured in July in the Exeter district in some numbers.

MARMOREA, Haw. The Beautiful Marbled.

Nat. Hist. Tin., vol. x. pl. 11, f. 3; *West. and Hump.*, t. 106, f. 4;
Stainton, Manual, vol. ii. p. 339.

Bred, and captured rather plentifully on the sand-hills of Dawlish Warren, September 1st.

LEUCATELLA, Linn. The Crescent-shouldered.

Nat. Hist. Tin., vol. ix. pl. 6, f. 3; *West. and Hump.*, t. 106, f. 1;
Stainton, Manual, vol. ii. p. 341.

Very rare. Captured in the Exeter district in July.

NANELLA, Hüb. The Beautiful Brindled-brown.

West. and Hump., t. 105, f. 9 (*A. proxima*); *Stainton, Manual*, vol. ii. p. 342.

Rare. Captured at Exmouth, May 20th, 1863.

DODECELLA, Linn. The Twelve-spotted.

West. and Hump., t. 104, f. 18 (*A. annulicornis*); *Stainton, Manual*, vol. ii. p. 342.

Very rare.

TRIPARELLA, Zel.

Nat. Hist. Tin., vol. ix. pl. 6, f. 2; *West. and Hump.*, t. 104, f. 18 (*A. dodecella*); *Stainton, Manual*, vol. ii. p. 342.

Rare. Captured at Dunsford in June.

TENEBROSELLA, Fisch. and Rösli. The Dark Moth.

Stainton, Manual, vol. ii. p. 342.

Captured at Coaver, near Exeter, in November.

LIGULELLA, Zel. The Strap-winged.

Stainton, Manual, vol. ii. p. 342.

Captured in Stoke Wood, near Exeter, June 16th, but very scarce.

TENIOLELLA, Trei.

Nat. Hist. Tin., vol. x. pl. 12, f. 1; *Stainton, Manual*, vol. ii. p. 343.

Also taken in Stoke Wood, on June 16th, 1858; not uncommon.

ANYTHLLIDELLA, Hüb. The Kidney Vetch Moth.

Nat. Hist. Tin., vol. x. pl. 14, f. 1; *Stainton, Manual*, vol. ii. p. 344.

Very rare. Taken on Langstone Cliff, near Dawlish, August 26th, 1857.

NÆVIFERELLA, Zel. The Gold-banded.

Nat. Hist. Tin., vol. ix. pl. 8, f. 2; *West. and Hump.*, t. 112, f. 54 (*M. aurofasciella*); *Stainton, Manual*, vol. ii. p. 346.

Captured at Fordlands, 25th May, 1858. I have also taken specimens flying by the side of a hedge formed of *Atriplex portulacoides* by the Preventive Station at Exmouth. August 8th.

BRIZELLA, T'is.

Nat. Hist. Tin., vol. x. pl. 15, f. 3; *Stainton, Manual*, vol. ii. p. 346.

Taken by Mr. Stainton, near Dawlish, by sweeping sea thrift (*Statice armeria*). It has been taken also by Mr. C. W. Dale, in June.

INOPELLA, Zel.

Nat. Hist. Tin., vol. x. pl. 15, f. 2; *Stainton, Manual*, vol. ii. p. 347.

Bred from flower heads of *Artemisia* collected on the banks of the South Devon Railway, August, 1864; and taken near Teignmouth and Bideford by sweeping plants of *Inula dysenterica* (the common flea-bane) in August.

SUBOCELLEA, Steph. The Eyelet.

Nat. Hist. Tin., vol. x. pl. 16, f. 3; *West. and Hump.*, t. 106, f. 7; *Stainton, Manual*, vol. ii. p. 347.

Very rare. Taken in July.

GENUS, **CHELARIA**, *Haworth*.HÜBNERELLA, *Don*. The Lobster-clawed.*West. and Hump.*, t. 108, f. 3; *Stainton, Manual*, vol. ii. p. 349.

Captured flying amongst oaks in Stoke Wood, August 21st, 1856; not uncommon.

GENUS, **NOTHRIS**, *Stainton*.DURDHAMELLA, *Stain*.*Stainton, Manual*, vol. ii. p. 351.

Rare. Captured at Teignmouth. The moth appears on the wing in July.

GENUS, **HARPELLA**, *Schrank*.GEOFFROYELLA, *Linn*. The Geoffroyan.*West. and Hump.*, t. 109, f. 4; *Stainton, Manual*, vol. ii. p. 352.

This beautiful moth is not uncommon in lanes shut in with old hedges, in May and June. This year (1878) the moth has been plentiful, more so than I have ever before observed it.

GENUS, **DASYCERA**, *Stainton*.SULPHURELLA, *Fab*. The Yellow Underwing.*West. and Hump.*, t. 109, f. 6; *Stainton, Manual*, vol. ii. p. 355.

Bred from larvæ feeding in decayed wood in great numbers. The moths come out in May and June.

GENUS, **CECOPHORA**, *Stainton*.MINUTELLA, *Linn*. The Double Gold-spotted.*West. and Hump.*, t. 119, fgs. 11, 13; *Stainton, Manual*, vol. ii. p. 356.

Captured on the Cowley Bridge Road, and Mr. D'Orville has bred it from larvæ feeding on dry herbs in June.

TRIPUNCTANA, *Haw*. The Treble-spotted.*West. and Hump.*, t. 119, f. 9; *Stainton, Manual*, vol. ii. p. 356.

Taken at Fordlands, and at Alphington (not common), in May and June.

ANGUSTELLA, *Hüb*. The Black-spotted Brimstone.*West. and Hump.*, t. 107, f. 7; *Stainton, Manual*, vol. ii. p. 356.

Captured in the Basin-yard, Exeter, June 6th, and at Fordlands, 16th June; not very common.

LUNARIS, *Haw*. The Lesser Tawny Crescent.*West. and Hump.*, t. 114, f. 18; *Stainton, Manual*, vol. ii. p. 357.

Taken in Messrs. Pince's nursery July 22nd. I took a specimen on a larch rail at Exwick in July, which appeared to have just emerged from the pupa. Whether

the larva had fed upon anything growing on the rail I am unable to say. (?)

LAMBDELLA, Don. The Tawny Crescent.

West. and Hump., t. 114, f. 17; *Stainton, Manual*, vol. ii. p. 357.

Very scarce. Captured in the Exeter district in June.

TINCTELLA, Treit.

Stainton, Manual, vol. ii. p. 358.

Captured in the old Roman road leading from St. Thomas Exeter, to Redhills, June 28th, but very scarce.

FUSCO-AURELLA, Haw. } The Brown-gold.
UNITELLA, Stain. }

West. and Hump., t. 108, f. 10 (*A. unitella*); *Stainton, Manual*, vol. ii. p. 358.

Bred by the Rev. J. Hellins from larvæ feeding on apple, in July, 1858. I have captured many in the Exeter woods in July.

FLAVIFRONTELLA, Hüb.

Stainton, Manual, vol. ii. p. 358.

Mr. D'Orville; one specimen only in June.

FUSCESENS, Haw.

West. and Hump., t. 107, f. 5 (*A. fuscescens*); *Stainton, Manual*, vol. ii. p. 358.

Captured by the Rev. J. Hellins, and by myself, August 10th, 1858. Not common.

PSEUDOSPLETELLA, Stain.

Stainton, Manual, vol. ii. p. 358.

Very common in warehouses and outbuildings in Exeter in July and August.

GENUS, **ECOGENIA, Guend.**

QUADRIPUNCTA, Haw. The Two-banded.

West. and Hump., t. 107, f. 10 (*A. bifasciella*); *Stainton, Manual*, vol. ii. p. 359.

Taken in some numbers in warehouses in Exeter in July.

GENUS, **ENDROSIS, Stainton.**

FENESTRELLA, Scop. The White-shouldered.

West. and Hump., t. 105, f. 4 (*A. sarcitella*); *Stainton, Manual*, vol. ii. p. 359.

Larvæ white, with a slight tinge of yellowish. Head piceous; second segment with a double or transversely lobed plate. Apex of abdomen pale piceous. Legs and pro-legs white. Taken feeding inside *Agaricus ulmarius*,

in January. The moths came out in May. Much too common in houses. I bred another from a larva which found its way into one of my Diptera boxes, and fed upon the body of one of the specimens. Came out April 30th, 1856.

GENUS, **BUTALTS**, *Treitschke*.

GRANDIPENNIS, *Haw.* The Great Raven-feather.

West. and Hump., t. 113, f. 24; *Stainton*, Manual, vol. ii., p. 359; and in *Ent. Ann.*, 1858.

Mr. Stainton says: "I observed the larvæ of this insect in the greatest profusion on furze-bushes on a steep hill-side between Torrington and the river. The webs were in February quite a feature in the landscape."

Family, GLYPHIPTERYGIDÆ, *Stainton*.

GENUS, **ACROLEPIA**, *Curtis*.

GRANITELLA, *Treit.*

Stainton, Manual, vol. ii. p. 363.

Very rare. Captured in the Exeter district in July, and at Chudleigh; at the latter place by Mr. Stainton.

PYGMÆANA, *Haw.*

West. and Hump., p. 248 (not figured); *Stainton*, Manual, vol. ii. p. 363.

Frequent in our woods, and in lanes, in August and September.

GENUS, **GLYPHIPTERYX**, *Stainton*.

FUSCOVIRIDELLA, *Haw.* The Brown-green.

West. and Hump., t. 113, f. 21; *Stainton*, Manual, vol. ii. p. 364.

Captured by beating hedges near Wonford, in the Exeter district, May 22nd, 1856. Not rare.

THRASONELLA, *Scop.* The Rush Moth.

West. and Hump., t. 113, f. 19; *Stainton*, Manual, vol. ii. p. 364.

Plentiful among rushes in a meadow below Fordlands House, June 18th, and almost everywhere where rushes grow.

FISCHERIELLA, *Zel.* Fischer's Moth.

Stainton, Manual, vol. ii. p. 365.

Captured by sweeping grass at Fordlands; plentiful on May 25th, 1856.

GENUS, **ÆCHMIA**, *Stainton*.

DENTELLA, *Zel.* The Toothed Wing.

West. and Hump., p. 250; *Stainton*, Manual, vol. ii. p. 365.

Captured at Chudleigh, and between Exmouth and Budleigh Salterton, August 16th. Very scarce.

GENUS, **PRITTIA**, *Stainton*.**OBSUREPUNCTELLA**, *Stain.* The Small Shining-brown.*West. and Hump.*, t. 96, f. 8 (*A. oleella*); *Stainton, Manual*, vol. ii. p. 366.

Taken in Stoke Wood (not uncommon), and also beaten out of mixed hedges, May 12th, 1857.

GENUS, **TIGNAMA**, *Duponchel*.**SERICIELLUM**, *Haw.* The Satin Pygmy.*West. and Hump.*, t. 112, f. 53.; *Stainton, Manual*, vol. ii. p. 367.

Captured flying in the bright sunshine at noon, on the borders of Stoke Wood, in May. This is a very restless and active little creature, and appears to revel in the heat and light of the sun.

STANNEELLUM, *Fisch. and Rösl.* The Pale Bronzy-grey.*Stainton, Manual*, vol. ii. p. 367.

This, so far as my experience goes, is rare with us. I captured it at Fordlands in May, 1862.

Family, **ARGYRESTHIDÆ**, *Stainton*.GENUS, **ARGYRESTHIA**, *Stainton*.**NITIDELLA**, *Fab.* The White-back.*West. and Hump.*, t. 111, fgs. 12 (*E. pruniella*); *Stainton, Manual*, vol. ii. p. 369.

Beaten out of hedges, in the Exeter district, in June and July; common.

SPINIELLA, *Zel.* The Sloe-bush Moth.*Stainton, Manual*, vol. ii. p. 369.

In black-thorn hedges and bushes (apparently generally distributed) in July.

ALBISTRIA, *Haw.* The Purple White-streak.*West. and Hump.*, t. 111, f. 11; *Stainton, Manual*, vol. ii. p. 370.

Common, and generally distributed, in hedges in August.

MENDICA, *Haw.* The Purple White-back.*West. and Hump.*, t. 111, f. 10; *Stainton, Manual*, vol. ii. p. 370.

Captured in a lane leading from St. Thomas, Exeter, to Redhills, June 19th; not common.

CURVELLA, *Linn.* The Brindled White-back Ermine.*West. and Hump.*, t. 111, f. 15; *Stainton, Manual*, vol. ii. p. 371.

Captured by the river at St. Mary's Clist, and beaten out of maple, near Exeter, July 1st, 1856.

PYGMÆELLA, Hüb. The Dwarf.*Stainton, Manual, vol. ii. p. 371.*

Beaten out of willow-bushes in Stoke Wood, June 18th;
not uncommon.

GOEDARTELLA, Linn. The Goedartian.*West. and Hump., t. 111, f. 19; Stainton, Manual, vol. ii. p. 372.*

Taken at Christow in July, and beaten out of alders by the
side of the Exe.

BROCKEELLA, Hüb. The Gold I. W.*West. and Hump., t. 111, f. 21; Stainton, Manual, vol. ii. p. 372.*

Rare. Captured at Christow in July, and at Kenton,
August, 1878.

GENUS, **ZELLERIA**, *Stainton.*

INSIGNIPENNELLA, Stain.*Stainton, Manual, vol. ii. p. 374.*

Very rare. Beaten out of fir-trees in Stoke Wood, near
Exeter, in March, 1858.

Family, **GRACILARIIDÆ**, *Stainton.*

GENUS, **GRACILARIA**, *Zeller.*

SWEDERELLA, Scha. The Swederin.

*Nat. Hist. Tin., vol. viii. pl. 1, f. 2; West. and Hump., t. 122, f. 3 (G.
thunbergella); Stainton, Manual, vol. ii. p. 376.*

Not uncommon among oaks in Fordlands and other woods
in May, and again in August.

STIGMATELLA, Fab. The Triangle-marked-red.*West. and Hump., t. 122, f. 1; Stainton, Manual, vol. ii. p. 376.*

Scarce. Taken at Dunsford, and at Stoke Wood, August
21st, 1862.

SEMIFUSCIA, Haw. The Semi-white-bar.

*Nat. Hist. Tin., vol. viii. pl. 1, f. 3; West. and Hump., t. 121, f. 9;
Stainton, Manual, vol. ii. p. 377.*

Very rare. Bred from cones on maple leaves, July, 1864.

ELONGELLA, Linn. The Mottled-red.

*Nat. Hist. Tin., vol. viii. pl. 2, f. 1; West. and Hump., t. 122, f. 4 (G.
hæmidactylella); Stainton, Manual, vol. ii. p. 377.*

Scarce. Taken at Dunsford, March 30th.

TRINGIPENNELLA, Zel. The Livid Slender.

*Nat. Hist. Tin., vol. viii. pl. 3, f. 1; West. and Hump., t. 122, f. 8
(G. rosicpennella); Stainton, Manual, vol. ii. p. 377.*

Bred in numbers from leaves of plantain gathered on the
rock in the New North Road, Exeter. The moths came
out from May 10th to June 2nd.

SYRINGELLA, *Fab.* The Confluent-barred.

Nat. Hist. Tin., vol. viii. pl. 2, f. 2; *West. and Hump.*, t. 121, f. 4;
Stainton, Manual, vol. ii. p. 378.

Common in gardens and woods in May and June.

GENUS, *CORISCUM*, *Zeller.*

BRONGNIARTELLUM, *Fab.*

West. and Hump., t. 121, f. 8; *Stainton, Manual*, vol. ii. p. 379.

Captured in the Exeter district in August; but it is rare.

CUCULIPENNELLUM, *Hüb.*

West. and Hump., t. 121, f. 5; *Stainton, Manual*, vol. ii. p. 379.

Rare. Taken at Starcross on May 17th, 1857, and at High Bickington—the latter by Mr. J. C. Dale.

SULPHURELLUM, *Haw.*

West. and Hump., t. 122, f. 10; *Stainton, Manual*, vol. ii. p. 379.

Taken occasionally in woods in May. I have captured it in Fordlands and Stoke Wood.

GENUS, *ORNIX*, *Zeller.*

AVELLANELLA, *Stain.* The Hazel.

Nat. Hist. Tin., vol. viii. pl. 3, f. 1; *Stainton, Manual*, vol. ii. p. 380.

Common in woods, and bred from larvæ feeding in leaves of hazel. The moths came out in July.

DEVONIELLA, *Stain.* The Devonian.

Stainton, Manual, vol. ii. p. 380.

Captured at Dawlish by Mr. Stainton.

ANGLICELLA, *Stain.* The English Ornix.

Nat. Hist. Tin., vol. viii. pl. 3, f. 2; *Stainton, Manual*, vol. ii. p. 380.

Taken in Stoke Wood and Heavitree (frequent); also bred from larvæ feeding in leaves of hawthorn. The moths came out May 20th.

FAGIVORA, *Frey.*

Nat. Hist. Tin., vol. viii. pl. 3, f. 3.

In a collection of unnamed specimens of micro-lepidoptera left to me by my late friend Mr. D'Orville, I found a single specimen of what I believe to be this species.

GUTTEA, *Haw.* The White-spotted Brown.

Nat. Hist. Tin., vol. viii. pl. 1, f. 1; *West. and Hump.*, t. 113, f. 18;
Stainton, Manual, vol. ii. p. 381.

This pretty little species is not uncommon, in May and June, in orchards and gardens in the Exeter district.

Family, COLEOPHORIDÆ, *Stainton*.

GENUS, COLEOPHORA, *Zeller*.

FABRICIELLA, *Villers*. The Fabrician.

West. and Hump., t. 113, f. 35 (*M. spirsicornis*); *Stainton, Manual*, vol. ii. p. 387.

Rare. Taken by sweeping grass, &c., on Stoke Hill, near Exeter, July 13th, 1857.

DEAURATELLA, *Lien*. The Gilt-over.

West. and Hump., t. 113, f. 36; *Stainton, Manual*, vol. ii. p. 387.

Scarce. Captured in the Exeter district by Mr. D'Orville and myself in July.

ALCYONIPENNELLA, *Kol*. The Kingfisher's Feather.

Nat. Hist. Tin., vol. v. pl. 15, f. 3; *West. and Hump.*, t. 113, f. 36 (*M. trifolii*); *Stainton, Manual*, vol. ii. p. 386.

Larvæ in Stoke Wood, on *Centaurea nigra*, 1871.

FUSCOCUPRELLA, *Stain*. The Dusky-gold.

Stainton, Manual, vol. ii. p. 366.

Bred from larvæ feeding, in globular case, on hazel leaves in Stoke Wood. The moths came out in May, 1862. Very scarce.

ANATIPENNELLA, *Hüb*. The Duck's Feather.

Nat. Hist. Tin., vol. iv. t. 4, f. 3; *Stainton, Manual*, vol. ii. p. 387.

The larvæ of this were found abundantly on sallow at Sidmouth a few years ago, the moths appearing in July.

ALBICOSTA, *Haw*. The White-edged.

Nat. Hist. Tin., vol. iv. pl. 8, f. 1; *Stainton, Manual*, vol. ii. p. 388.

Rare. Captured on Marypole Head, near Exeter, May 20th, 1878.

PALLIATELLA, *Zinck*. The Cloaked.

Stainton, Manual, vol. ii. p. 388.

Beaten out of an ash-tree in Stoke Wood, July 1st, 1858. Very scarce. Larvæ on September 25th, 1869.

CURRUCIPENNELLA, *Fisch. v. Rösl*. The Blackcap's Feather.

Nat. Hist. Tin., vol. iv. pl. 4, f. 1; *Stainton, Manual*, vol. ii. p. 388.

Larvæ on oaks on the Duryard Estate, near Exeter, June 4th, 1862. Not common.

IBIPENNELLA, *Heyd*. The Ibis' Feather.

Nat. Hist. Tin., vol. iv. pl. 4, f. 2; *Stainton, Manual*, vol. ii. p. 387.

Not uncommon at Sidmouth, particularly in the larva state.

DISCORDELLA, Zel. The Cock's Feather.

Nat. Hist. Tin., vol. iv. pl. 5, f. 1; *West. and Hump.*, t. 114, f. 1 (*P. gallipennella*); *Stainton, Manual*, vol. ii. p. 390.

Rare with us. I have taken it at Dawlish (in June, 1869).
The larva in May at Langstone Point, near Dawlish.

THERINELLA, Zel. The Summer Moth.

Stainton, Manual, vol. ii. p. 391.

Larva case long, straight, and white; on leaves of *Ciniscus arvensis* in the Powderham marshes, September, 1868.

LINEOLEA, Haw. The Red-specked.

Nat. Hist. Tin., vol. iv. pl. 7, f. 2; *West. and Hump.*, t. 114, f. 2;
Stainton, Manual, vol. ii. p. 391.

Bred from larvæ feeding on the radical leaves of *Betonica officinalis*, growing on Redhills, near Exeter, in June. The moths came out July 23rd to 28th, 1856. This also feeds on *Ballota nigra*. I obtained a good many larvæ on this plant in 1861.

MURINIPENNELLA, Fisch. and Rösl. The Mouse-coloured.

Stainton, Manual, vol. ii. p. 392.

Rare. Captured in July in Stoke Wood.

CÆSPITITIELLA, Zel. The Rush Moth.

Nat. Hist. Tin., vol. iv. pl. 6, f. 1; *Stainton, Manual*, vol. ii. p. 392.

Common everywhere on the seeds of rushes in May and June.

APICELLA, Stain.

Stainton, Manual, vol. ii. p. 391.

Very scarce. Two specimens only have fallen to my lot. Taken in July.

ARGENTULA, Zel. The Little Silver.

Stainton, Manual, vol. ii. p. 391.

Bred from larvæ feeding on the seeds of *Achillæa millefolium*, in the Exeter district, and at Dawlish. The moths came out in July. The case in which the larva lives is whitish, granulated on the outside with minute bits of the chaffy scales of the dead flower-heads. The apex is obtuse and triangular. The larvæ will not eat the seeds until they have become ripe and hardened, and they will not touch the flower-heads in the green state.

VIRGAUREÆ, Stain. The Golden Rod Moth.

Nat. Hist. Tin., vol. iv. pl. 6, f. 2; *Stainton*, Manual, vol. ii. p. 391.

Bred from larvæ found feeding on the seeds of the golden rod, at the bottom of Stoke Wood. Found also at Bideford. The moths come out in September. I discovered this species November 1st, 1853; it was then new to Britain. The case in which the larva lives is dark-brown, the apex triangular, and the whole is almost covered with the whitish filaments of the seeds, directed backwards.

ALBITARSELLA, Zel. The White-footed.

Stainton, Manual, vol. ii. p. 386.

Bred from larvæ found feeding on ground ivy (*Glechoma hederacea*), in the Matford Lane, near Exeter, June, 1857.

NIGRICELLA, Steph. The Black-fringed Clay.

West. and Hump., t. 113, f. 32; *Stainton*, Manual, vol. ii. p. 385.

Bred from larvæ feeding on the leaves of plum, at Coaver, near Exeter, July, 1858. Larvæ also on hawthorn.

FUSCEDINELLA, Zel. The Dusky-winged.

West. and Hump., t. 113, f. 28 (*A. obscurella*); *Stainton*, Manual, vol. ii. p. 385.

Bred from larvæ feeding on elm leaves. Came out July 30th, 1856. Common some seasons on elm; and this spring, 1878, the larvæ were plentiful on alder in a meadow near the Bristol and Exeter Railway station.

GRYPHIPENNELLA, Bouche. The Rose-leaf Coleophora.

West. and Hump., t. 113, f. 29; *Stainton*, Manual, vol. ii. p. 385.

Bred from larvæ feeding on the leaves of the dog-rose (*Rosa canina*), at Wonford and Redhills. The moths came out July 6th.

VIMINETELLA, Hey.

Nat. Hist. Tin., vol. v. pl. 16, f. 1; *Stainton*, Manual, vol. ii. p. 385.

Bred from larvæ feeding on leaves of willow all through the Exeter district, and is common. The moths came out July 3rd, 1857.

Var. MYRICÆ, E. P. The Gale Moth.

This is paler in all its parts than *Viminetella*; the larva case is neater made, and in some instances longer than in that species. I met with this in great numbers, feeding on *Myrica gale*, on Bovey Heathfield, in May, 1863. They will also eat willow. The moths came out July 18th the same year.

SOLITARIELLA, Zel. The Stitchwort Coleophora.

Nat. Hist. Tin., vol. iv. pl. 2, f. 8; *Stainton, Manual*, vol. ii. p. 384.

Bred. The trivial name of this moth is certainly a misnomer; for of all the British species (the larvæ at least) this is one of the most gregarious, as the plants of *Stellaria holostea* are generally covered with them when the plant is attacked at all. The case of this species is very ingeniously made; but the cleverness of the workman is chiefly seen in the artistic way in which he enlarges his house to the conditions of his corporation. The enlargement is made by inserting little gussets of the withered portions of the leaves of the plants. Common all through the Exeter district in July.

LUTIPENNELLA, Zel.

Stainton, Manual, vol. ii. p. 384.

Not uncommon in Stoke Wood, near Exeter, and Fordlands, &c., in July.

BADIIPENNELLA, Fisch. and Rösl.

Stainton, Manual, vol. ii. p. 384.

Taken in Stoke Wood, not common, in July, 1858. Larvæ on ash leaves, Redhills.

LIMOSIPENNELLA, Fis. von Wald.

Nat. Hist. Tin., vol. iv. pl. 2, f. 2; *Stainton, Manual*, vol. ii. p. 384.

Taken by Mr. D'Orville in the Exeter district.

Family, ELACHISTIDÆ, *Stainton*.

GENUS, BEDELLIA, *Stainton*.

SOMNULENTELLA, Zel. The Sluggish Bedellia.

Stainton, Manual, vol. ii. p. 395.

Bred from larvæ feeding in the leaves of the large white convulvulus (*Calystegia sepium*) by the side of the Canal, Exeter, September 22nd, 1857. Larva pale green, with a very narrow dorsal, and lateral lines rosy-red; the latter are broken into spots on the apical margins of each segment. These larvæ are the cleanliest internal feeders I know in their habits, as they, instead of acting as most other internal feeders, which allow their excreta to remain in the mine, cut a hole in the under side of the leaf, and project two of their abdominal segments, and so allow the excreta to fall to the ground, by this means keeping their homes perfectly clean. The moths come out in October.

GENUS, **BATRACHEDRA**, *Stainton*.**PRÆANGUSTA**, *Haw.* The Narrow-winged.*Stainton*, Manual, vol. ii. p. 396.

Very rare. Captured by sweeping, near Stoke Wood, in June, 1869. Mr. D'Orville also took this species.

GENUS, **CHAULIODUS**, *Treitschke*.**ILLIGERELLUS**, *Hüb.* Illiger's Moth.*Stainton*, Manual, vol. ii. p. 397.

Very rare. Captured in the Exeter district in July.

GENUS, **LAVERNA**, *Stainton*.**EPILOBIELLA**, *Sch.* The Willow-herb Moth.

Nat. Hist. Tin., vol. xi. pl. 5, f. 3; *Stainton*, Manual, vol. ii. p. 398.

Bred from larvæ feeding in the leaves of *Epilobium hirsutum* and *montanum* in the Exeter district, the moths appearing in July.

DECORELLA, *Steph.* The Elegant.

Nat. Hist. Tin., vol. xi. pl. 6, f. 1; *West. and Hump.*, t. 106, f. 3; *Stainton*, Manual, vol. ii. p. 399.

Not common. Captured in Fordlands Wood, and also in Stoke Wood, on May 2nd. Taken by Mr. Stainton at Chudleigh.

SUBBISTRIGELLA, *Haw.* The Double-striped.

Nat. Hist. Tin., vol. xi. pl. 6, f. 2; *Stainton*, Manual, vol. ii. p. 399.

Not uncommon. Taken at Fordlands, May 13th, 1863, and at Chudleigh (Mr. Stainton).

RHAMNIELLA, *Zel.* The Buck-thorn.

Nat. Hist. Tin., vol. xi. pl. 6, f. 3; *Stainton*, Manual, vol. ii. p. 400.

Bred by Mr. D'Orville from larvæ collected at Fordlands in leaves of *Rhamnus frangula*.

GENUS, **CHRYSOCLYSTA**, *Stainton*.**LINNEELLA**, *Clk.* The Linnæan.

West. and Hump., t. 113, f. 1; *Stainton*, Manual, vol. ii. p. 400.

Larvæ on the inner bark of lime trees; not common with us. This is the gem of the micro-lepidoptera. It is found sitting on the trees from whence it has just emerged in July.

SCHRANKELLA, *Hüb.* The Schrankellian.

West. and Hump., t. 113, f. 2 (*G. Roesella*); *Stainton*, Manual, vol. ii. p. 400.

Captured on the Cowley Bridge Road in July, and at Dunsford in August.

FLAVICAPUT, Haw. The Yellow-headed Black.

West. and Hump., t. 113, f. 33; *Stainton*, Manual, vol. ii. p. 401.

Not uncommon near houses in June, in Exeter.

GENUS, **ANYBIA**, *Stainton*.

LANGIELLA, Hüb. Lang's Anybia.

Stainton, Manual, vol. ii. p. 401.

Bred from larvæ feeding in the leaves of the enchanter's nightshade (*Circæa lutetiana*) growing by the side of a wall in the old lane leading from St. Thomas to Redhills, Exeter. The larva is pale green, and makes oblong blotches in the leaves. When full-fed it comes out of the mine, and spins a white silken cocoon in the point of the leaf. It feeds also in the leaves of *Epilobium hirsutum*. The moths came out August 4th, 1865. This has been taken also at Lynton.

GENUS, **ASYCHNA**, *Stainton*.

MODESTELLA, Dup. The Notched Horn.

West. and Hump., t. 113, f. 27; *Stainton*, Manual, vol. ii. p. 402.

Captured by sweeping grass by the sides of woods in May and June; not uncommon.

GENUS, **CHRYSOCORYS**, *Curtis*.

FESTALIELLA, Hüb. The Festal Moth.

West. and Hump., t. 113, f. 34; *Stainton*, Manual, vol. ii. p. 402.

Taken in Stoke Wood, May 12th; not common.

GENUS, **ANTISPILA**, *Herrich-Schäffer*.

PFEIFFERELLA, Hüb. The Four-spotted Gold.

Nat. Hist. Tin., vol. xi. pl. 8, f. 2; *West. and Hump.*, t. 112, f. 56; *Stainton*, Manual, vol. ii. p. 366.

Bred from larvæ feeding between the cuticles of the leaves of the dog-wood (*Cornus sanguinea*), in a lane near Millbrook, Countess Weir. When full-fed the larvæ cut out two corresponding elliptical pieces, and glue down the edges of the blotch in which they have been feeding. A very small bit is left till the case is nearly finished; when this is done, the bit of attachment to the leaf is severed, and the little elliptical case falls to the ground leaving a hole in the leaf corresponding to the case. The larvæ then undergo their metamorphosis in the case, and the moths came out. May, 1857.

GENUS, **ELACHISTA**, *Stainton*.

ATRICOMELLA, Stain. The Small Dot.

Nat. Hist. Tin., vol. iii. t. 1, f. 1; *West. and Hump.*, t. 112, f. 32; *Stainton*, Manual, vol. ii. p. 406.

Very scarce. Taken in the Exeter district in June, 1856.

LUTICOMELLA, *Zel.* The White-spotted Sable.

West. and Hump., t. 112, f. 35 (*M. guttella*); *Stainton, Manual*, vol. ii. p. 406.

Rare. Taken in the Cathedral Close in July.

NIGRELLA, *Hüb.* The Small Double Silver-bar.

West. and Hump., t. 112, f. 40; *Stainton, Manual*, vol. ii. p. 406.

Taken by sweeping grass, &c., in June. Scarce.

SUBNIGRELLA, *Dgl.* The Half-black.

Nat. Hist. Tin., vol. iii. pl. 7, f. 2; *Stainton, Manual*, vol. ii. p. 408.

Captured by sweeping in June. Not common.

OBSCURELLA (?), *Stain.*

Stainton, Manual, vol. ii. p. 407.

Taken by sweeping grass, &c., in July.

MEGERLELLA, *Stain.* Megerle's Elachiste.

Stainton, Manual, vol. ii. p. 408.

Bred from larvæ feeding in *Bromus sterilis*. When full-fed it comes out of the leaf, and attaches itself by the tail to the glass, in which position the pupa is suspended. The moths came out May 13th. Not common.

ADSCITELLA, *Stain.*

Stainton, Manual, vol. ii. p. 408.

Captured in the early part of June, 1878. Appears to be rare with us.

RHYNCHOSPORELLA, *Stain.* The Beak-rush Moth.

Stainton, Manual, vol. ii. p. 410.

Bred by Mr. Stainton from larvæ found in leaves of *Eleocharis* on Haldon. The moths came out in June.

RUFOCINEREA, *Haw.* The Red-brindled.

Nat. Hist. Tin., vol. iii. pl. 2, f. 3; *West. and Hump.*, t. 114, f. 11; *Stainton, Manual*, vol. ii. p. 411.

Very common everywhere in April and May.

CYGNIPENNELLA, *Hüb.* The Swan's Feather.

West. and Hump., t. 114, f. 7; *Stainton, Manual*, vol. ii. p. 412.

Captured abundantly on the sloping cliff beyond Exmouth. They were flitting about amongst the stems of grass, and settling on them. May 20th, 1863.

GENUS, *TISCHERIA*, Zeller.*MARGINEA*, Haw. The Fuscous-edged.*Stainton*, Manual, vol. ii. p. 413.

Common. Bred from bramble-leaves. Specimens vary much in size—so much so as to lead one to think they were two species—but their markings are exactly alike. The moths appear in May and September.

Family, LITHOCOLLETIDÆ, *Stainton*.

GENUS, LITHOCOLLETIS, Zeller.

LANTANELLA, Sch. The Viburnum.*Nat. Hist. Tin.*, vol. ii. pl. 4, f. 1; *Stainton*, Manual, vol. ii. p. 419.

Taken near Teignmouth (recorded in *Nat. Hist. Tin.*, vol. ii. p. 168); and I have a specimen taken near Exeter.

LAUTELLA, Zel. The Elegant.*Stainton*, Manual, vol. ii. p. 416.

Bred from larvæ feeding in evergreen oak (plentiful) in the autumn of 1857. The moths came out in February, but were forced. Mr. D'Orville has also bred them.

POMIFOLIELLA, Zel. The Apple-leaf Moth.*Stainton*, Manual, vol. ii. p. 418.

Bred from larvæ in apple leaves. Common. Some that I have bred from hawthorn leaves have the ground-colour of the wings darker than those from the apple. I have also reared this species from leaves of quince; in these I see no difference from those reared from apple.

CORYLI, *Nicelli*. The Hazel Lithocolletis.*Nat. Hist. Tin.*, vol. ii. pl. 2, f. 2; *Stainton*, Manual, vol. ii. p. 419.

Bred from larvæ feeding in the upper side of nut leaves. Common all over the county. The moth comes out in May and July.

SPINICOLELLA, Kol. The Blackthorn.*Nat. Hist. Tin.*, vol. ii. pl. 3, f. 2; *Stainton*, Manual, vol. ii. p. 418.

Bred from black-thorn leaves. The moth comes out in May and August. Common.

FAGINELLA, Mann. The Beech.*Nat. Hist. Tin.*, vol. ii. pl. 3, f. 3; *Stainton*, Manual, vol. ii. p. 418.

Bred from larvæ feeding in beech. Frequent in hedges and low-growing bushes in May and in September. It is generally distributed over the county.

TORMINELLA, Frey. The Service-tree Moth.

Stainton, Manual, vol. ii. p. 418.

Bred by Mr. M'Lachlan from larvæ found in the leaves of a morella cherry in a garden in Exeter.

SALICICOLELLA, Sir. The Sallow.

Nat. Hist. Tin., vol. ii. pl. 1, f. 2; *Stainton, Manual*, vol. ii. p. 418.

Bred from leaves of sallow gathered in Stoke Wood. I forced the pupæ, so that the moths came out March 13th, 1863. In their natural state they would not come till May.

VIMINETORUM, Stain. The Willow.

Nat. Hist. Tin., vol. ii. pl. 1, f. 1; *Stainton, Manual*, vol. ii. p. 417.

Bred by Mr. D'Orville from larvæ collected near his house at Alphington.

ULMIFOLIELLA, Hüb.

Nat. Hist. Tin., vol. ii. pl. 6, f. 3; *Stainton, Manual*, vol. ii. p. 417.

This species, so far as my observation goes, is scarce with us.

QUERCIFOLIELLA, Fisch. and Rösl.

Stainton, Manual, vol. ii. p. 420.

Bred by Mr. D'Orville in some numbers, and taken by myself in May near Exeter.

MESSANIELLA, Zel. The Messinian.

Nat. Hist. Tin., vol. ii. pl. 6, f. 2; *Stainton, Manual*, vol. ii. p. 420.

Very abundant in the evergreen oak, and also in the leaves of the common oak, in our woods. The moths come out in May and in September.

VIMINIELLA, Sir. The Sallow-leaf Miner.

Nat. Hist. Tin., vol. ii. pl. 1, f. 3; *Stainton, Manual*, vol. ii. p. 420.

Bred from larvæ collected near Exeter in the leaves of sallows. I forced out the moths on January 20th, 1858; their proper time would be May. This species appears to be generally distributed, it having been found at Dawlish and Lynmouth.

ALNIFOLIELLA, Hüb. The Alder-leaf.

Nat. Hist. Tin., vol. ii. pl. 5, f. 3; *Stainton, Manual*, vol. ii. p. 416.

Bred from larvæ collected in alder leaves by the side of the Exe on November 10th, 1856. The moths came out in the hothouse March 4th, 1857; their natural time would be May.

CRAMERELLA, Fab. The Cramerian.

West. and Hump., t. 113, f. 11; *Stainton, Manual*, vol. ii. p. 415.

Not uncommon in Stoke Wood, near Exeter, in May.

SYLVELLA, Haw.

Stainton, Manual, vol. ii. p. 415.

Beat out of maple-bushes at Alphington, May 6th; captured also on Redhills on June 6th.

EMBERIZÆPENNELLA, Bou. The Bunting Feather.

Nat. Hist. Tin., vol. ii. pl. 8, f. 3; *Stainton, Manual*, vol. ii. p. 422.

Bred by Mr. D'Orville in some numbers from larvæ feeding in the leaves of *Lycesteria formosa* growing in his garden at Alphington. How the parent moths discovered that the Nepal plant belonged to the natural order *Caprifoliaceæ*—the same as the honeysuckle, their natural food in this country—is beyond me to say. Their instinct, or something very nearly allied to common sense, directed them to the fine foliage of this Indian introduction.

NICELLII, Zel. Nicellii's Moth.

Stainton, Manual, vol. ii. p. 421.

This pretty species has been bred by Mr. D'Orville from larvæ found in the Exeter district. The perfect insects come out in May and September.

STETTINENSIS, Nic. The Stettin Moth.

Nat. Hist. Tin., vol. ii. pl. 6, f. 1; *Stainton, Manual*, vol. ii. p. 421.

Found at Dawlish (recorded in *Nat. Hist. Tin.*, vol. ii. p. 193).

SCHREBERELLA, Fab. The Schreberian.

West. and Hump., t. 112, f. 6; *Stainton, Manual*, vol. ii. p. 422.

This has been taken at Exmouth (*Nat. Hist. Tin.*, vol. ii. p. 204); Stoke Wood, by myself; and bred by Mr. D'Orville. The moth appears in May.

TRISTRIGELLA, Haw. The Treble-spotted Gold.

West. and Hump., t. 112, f. 7; *Stainton, Manual*, vol. ii. p. 422.

Bred from larvæ feeding in elm leaves collected near Exeter. The moths came out in May, 1866.

TRIFASCIELLA, Haw. The Tawny Treble-bar.

West. and Hump., t. 112, f. 8; *Stainton, Manual*, vol. ii. p. 422.

Generally plentiful where the honeysuckle grows, on which the larvæ feed. The moth comes out in May and October.

Family, LYONETIIDÆ, *Stainton*.

GENUS, LYONETIA, *Hüb.*

CLERCKELLA, *Linn.* The Clerkian.

West. and Hump., t. 112, f. 24; *Stainton*, Manual, vol. ii.

Bred from bluish-green larvæ, with head and two spots on second segment black; legs black, and very short; the anal segments reddish. It has a very irregular geometric mode of progression. The larva spins a silken tube, wider at one end than the other, in which it lives. This is attached by strong silken threads to the veins on the under side of apple leaves. This tubular dwelling reminds one, from the disposition of the strong threads, of a hammock slung up. The larva undergoes its transformation in the larger end of the tube. The pupa is of a blue-green colour, and can be easily seen through the silk. The moths come out in September; they were abundant in 1857.

GENUS, PHYLLOCNISTIS, *Zeller*.

SUFFUSELLA, *Zel.* The Smeared.

Stainton, Manual, vol. ii. p. 424.

Bred by Mr. D'Orville from larvæ taken in his garden, and captured by myself, amongst poplars, at Mount Pleasant and Exmouth Warren, September 1st.

SALIGNA, *Zel.* The Willow.

West. and Hump., t. 112, f. 22; *Stainton*, Manual, vol. ii. p. 425.

Beaten out of sallows in Stoke Wood in August, 1858.

GENUS, CEMIOSTOMA, *Zeller*.

LABURNELLA, *Hey.* The Laburnum-eater.

Nat. Hist. Tin., vol. i. pl. 1, f. 1; *Stainton*, Manual, vol. ii. p. 425.

Bred from larvæ feeding in laburnum leaves collected near Exeter; common some seasons. The moth comes out in May, and another brood in August or September. In September, 1853, the larvæ were particularly abundant.

SCITELLA, *Zel.* The Beautiful.

Nat. Hist. Tin., vol. i. pl. 1, f. 3; *Stainton*, Manual, vol. ii. p. 426.

Captured in Stoke Wood, July 1st, 1858; not common. Mr. Stainton says that in Devonshire he has repeatedly sought in vain for this species.

GENUS, OPOSTEGA, *Zeller*.

CREPUSCULELLA, *Fisch. and Rösl.*

Stainton, Manual, vol. ii. p. 427.

Very rare; one specimen only. Taken in June.

GENUS, *BUCCALATRIX*, Zeller.*ULMELLA*, Mann. The Elm Moth.

Nat. Hist. Tin., vol. vii. pl. 2, f. 1; *West. and Hump.*, t. 112, f. 18
(*A. rufipinella*); *Stainton, Manual*, vol. ii. p. 427.

Scarce. Taken in June in the Exeter district.

CRATÆGI, Zel. The White-thorn Moth.

Nat. Hist. Tin., vol. vii. pl. 2, f. 2; *West. and Hump.*, t. 112, f. 13
(*A. culicispennellum*); *Stainton, Manual*, vol. ii. p. 428.

Taken by sweeping amongst long grass, &c., at the bottom
of a hedge on Marypole Head, near Exeter, July 1st.

MARITIMA, Stain. The Sea-aster Moth.

Nat. Hist. Tin., vol. vii. pl. 3, f. 1; *Stainton, Manual*, vol. ii. p. 428.

Mr. Stainton says he "first had the opportunity of col-
lecting the larvæ of this species in a salt-marsh at
Barnstaple, in the leaves of *Aster trifolium*."

FRANGULELLA, Goeze. The Buck-thorn Moth.

Nat. Hist. Tin., vol. vii. pl. 4, f. 1; *Stainton, Manual*, vol. ii. p. 428.

Beaten out of mixed hedges, in June, 1863. Scarce.

Family, NEPTICULIDÆ, Stainton.

GENUS, *NEPTICULA*, Zeller.*ATRICAPITELLA*, Haw. The Black-headed Pigmy.

Bred from larvæ collected in the neighbourhood of Exeter
in May. Not very common.

RUFICAPITELLA, Haw. The Red-headed Pigmy.

Nat. Hist. Tin., vol. i. pl. 7, f. 2; *Stainton, Manual*, vol. ii. p. 431.

Bred from larvæ found in oak leaves in October. The
moths came out March 23rd.

MINUSCULELLA, Her Sch.

Nat. Hist. Tin., vol. vii. pl. 8, f. 1.

Mr. Stainton says, p. 166: "I have a specimen taken near
Exeter which is probably referable to this species; it is
not known with perfect certainty to occur in England,
and the larvæ has never yet been found here."

ANOMALELLA, Goeze.

Nat. Hist. Tin., vol. i. pl. 1, f. 2; *Stainton, Manual*, vol. ii. p. 422.

Bred from larvæ feeding in rose leaves in Coaver Garden,
near Exeter. The moths came out in August.

VISCERELLA, Dgl.

Nat. Hist. Tin., vol. i. pl. 3, f. 1; *Stainton, Manual*, vol. ii. p. 431.

Rare. Taken in the Exeter district in May.

SUBBIMACULELLA, Haw. The Ten-spotted Pigmy.

Nat. Hist. Tin., vol. i. pl. 7, f. 3; *Stainton, Manual*, vol. ii. p. 433.

Captured by sweeping grass, &c., under oaks, in June; but scarce. The larvæ feed in oak leaves. I have frequently noticed it, and collected it, but could not rear it.

SALICIS, Stain. The Sallow Pigmy.

Nat. Hist. Tin., vol. i. pl. 2, f. 1; *Stainton, Manual*, vol. ii. p. 434.

Bred from leaves of sallows collected near Stoke Wood, Exeter. The moths came out in June, 1863.

MICROTHERIELLA, Wing. The Least Pigmy.

Nat. Hist. Tin., vol. i. pl. 2, f. 3; *Stainton, Manual*, vol. ii. p. 435.

Rare. Captured in the Exeter district in May.

IGNOBILELLA, Stain. The Pigmy Silver-bar.

Nat. Hist. Tin., vol. i. pl. 7, f. 1; *Stainton, Manual*, vol. ii. p. 434.

Rare. Captured October 5th, 1853, near Exeter.

PLAGICOLELLA, Stain.

Nat. Hist. Tin., vol. i. pl. 4, f. 1; *Stainton, Manual*, vol. ii. p. 436.

Not common. In the leaves of black-thorn in the Exeter district, the moths appearing in May and in August.

PRUNETORUM, Stain. The Black-thorn Pigmy.

Nat. Hist. Tin., vol. i. pl. 6, f. 3; *Stainton, Manual*, vol. ii. p. 437.

Bred from larvæ, feeding in sloe leaves, collected in lanes in the Exeter district. The moth comes out in February.

TITYRELLA, Dgl.

Nat. Hist. Tin., vol. i. pl. 3, f. 3; *Stainton, Manual*, vol. ii. p. 436.

Rare. Captured in Stoke Wood June 10th, 1853.

ANGULIFASCIELLA, Stain. The Oblique-banded Pigmy.

Nat. Hist. Tin., vol. i. pl. 1, f. 3; *Stainton, Manual*, vol. ii. p. 435.

Taken in Devonshire, as recorded in *Nat. Hist. Tin.*, vol. i. p. 92, in June and July.

MARGINICOLELLA, Stain.

Nat. Hist. Tin., vol. i. pl. 3, f. 2; *Stainton, Manual*, vol. ii. p. 437.

Bred from larvæ on the bark of apple. The moths came out May 3rd.

ALNETELLA, Stain. The Alder Pigmy.

Stainton, Manual, vol. ii. p. 437.

Rare. Captured in the Exeter district in May.

AURELLA, Fab. The Diamond-barred Pigmy.

Nat. Hist. Tin., vol. i. pl. 1, f. 1; *West. and Hump.*, t. 112, f. 47; *Stainton, Manual*, vol. ii. p. 438.

Bred from larvæ found in October in bramble leaves. Generally abundant.

Section, PTEROPHORINA.

GENUS, PTEROPHORUS, Geoffroy.

OCHRODACTYLUS, Hüb. The Ochreous Plume.

West. and Hump., t. 123, f. 16; t. 124, f. 8; *Stainton*, Manual, vol. ii. p. 440.

Not uncommon in the Exeter district, in July, amongst rank herbage.

SIMILIDACTYLUS, Dale. The Dusky Plume.

West. and Hump., t. 124, f. 3; *Stainton*, Manual, vol. ii. p. 443 (*P. lithodactylus*).

Captured in Stoke Wood, amongst oaks, in August. Not very common.

TRIGONODACTYLUS, Haw. The Triangle Plume.

West. and Hump., t. 124, f. 4; *Stainton*, Manual, vol. ii. p. 440.

Captured near Sidmouth, in July, 1856, by Mr. Cooke.

ZETTERSTEDTII, Zel. Zetterstedt's Plume.

Stainton, Manual, vol. ii. p. 441.

Taken at Lynmouth by Mr. Boyd, as recorded by Mr. Stainton, in July. (*Entomologist's Annual*, 1866, p. 38.)

ISODACTYLUS, Zel. The Hoary Plume.

West. and Hump., t. 123, f. 10; *Stainton*, Manual, vol. ii. p. 440.

Taken at Teignmouth and at Exmouth on *Ononis arvensis* (rest-harrow) in July.

ACANTHODACTYLUS, Hüb. The Thorny Plume.

West. and Hump., t. 124, f. 8; *Stainton*, Manual, vol. ii. p. 441.

Scattered over the county wherever the rest-harrow grows. I captured specimens on Langstone Point, near Dawlish, and also at Exeter, in June. Mr. D'Orville bred this from larvæ found feeding on the flower buds of scarlet geraniums in his garden.

PUNCTIDACTYLUS, Haw. The Brindled Plume.

West. and Hump., t. 124, f. 12; *Stainton*, Manual, vol. ii. p. 441.

Captured in Stoke Wood, amongst *Pteris aquilina*, in October. The larvæ of this Mr. D'Orville found feeding on the seed-vessels of the common columbine (*Aquilegia vulgaris*).

PHÆODACTYLUS, Hüb. The Crescent Plume.

West. and Hump., t. 123, f. 18; *Stainton*, Manual, vol. ii. p. 442.

In abundance on the rest-harrow on the cliffs beyond Exmouth, in July, 1874. Taken also at Teignmouth.

BIPUNCTIDACTYLUS, Steph. The Grey-wood Plume.*West. and Hump.*, t. 123, f. 5; *Stainton*, Manual, vol. ii. p. 442.

Common, amongst coarse herbage, in July.

FUSCUS, Retz. The Brown-wood Plume.*West. and Hump.*, t. 123, f. 6; *Stainton*, Manual, vol. ii. p. 442.

Captured in Stoke Wood in June; not common.

PTERODACTYLUS, Linn. The Common Plume.*West. and Hump.*, t. 123, f. 7; *Stainton*, Manual, vol. ii. p. 443.

Common everywhere, amongst bushes and rough herbage, in August.

OSTEODACTYLUS, Zel. The Bone-coloured Plume.*Stainton*, Manual, vol. ii. p. 443.This species has been bred by the Rev. J. Hellins. The larvæ were found feeding on the golden rod (*Solidago virgaurea*). (*Entomologist's Magazine*, December, 1867, p. 157.)**ARIDUS, Zel.***Ent. Ann.*, 1870, p. 143; *Ent. Ann.*, 1871, p. 93.

A specimen captured by Mr. D'Orville.

GALACTODACTYLUS, Hüb. The Spotted White Plume.*West. and Hump.*, t. 123, f. 4; *Stainton*, Manual, vol. ii. p. 444.

Not uncommon in lanes and woodsides amongst rank herbage in July.

PENTADACTYLUS, Linn. The Large White Plume.*West. and Hump.*, t. 123, f. 2; *Stainton*, Manual, vol. ii. p. 444.

Common amongst nettles and rank herbage in June and July.

*Section, ALUCITINA.***GENUS, ALUCITA, Linnaeus.****POLYDACTYLA, Hüb.** The Many-fingered Plume.*West. and Hump.*, t. 124, fgs. 19, 20; *Stainton*, Manual, vol. ii. p. 445.

Common. Bred from whitish larvæ feeding in the flowers of the honeysuckle. The larvæ went into pupa on June 14th, and spun a white and very slight silken cocoon on the side of the box in which they were confined. Pupa, pale testaceous yellow as seen through the cocoon. The moths came out July 4th.

LUNDY ISLAND.

I am, as stated in the preface to this catalogue, indebted to H. G. Heaven, Esq., the proprietor of Lundy Island, for his kindness in supplying me with the names of the Lepidoptera observed by himself. Many species have been added to the list since that supplied to Mr. Chanter in his history of the island, published in 1877.

LEPIDOPTERA DIURNI.

Brimstone	<i>Gonopteryx rhamni</i>
Clouded Yellow	<i>Colias edusa</i>
Cabbage White	<i>Pieris brassicæ</i>
Small White	<i>Rup rapæ</i>
Green-veined White	— <i>napi</i>
Orange-tip	<i>Anthocharis cardamines</i>
Pearl-bordered Fritillary	<i>Argynnis euphrosyne</i>
Small Pearl-bordered Fritillary	— <i>silene</i>
Heath Fritillary	<i>Melitæa athalia</i>
The Comma	<i>Vanessa C. album</i>
Small Tortoiseshell	— <i>urticæ</i>
Large Tortoiseshell	— <i>polychloros</i>
The Peacock	— <i>io</i>
Red Admiral	— <i>atalanta</i>
Painted Lady	— <i>cardui</i>
Small Meadow Brown	<i>Satyrus tithonus</i>
Large Meadow Brown	— <i>janira</i>
Small Heath	<i>Chortobius pamphilus</i>
Small Copper	<i>Polyommatus phlæas</i>
Brown Argus	<i>Lycæna agestis</i>
Common Blue	— <i>alexis</i>

SPHINGIDÆ.

Death's Head	<i>Acherontia atropos</i>
Convolvulus Hawk Moth	<i>Sphinx convolvuli</i>
Poplar Hawk	<i>Smerinthus populi</i>
Humming-bird Hawk	<i>Macroglossa stellatarum</i>

HEPIALIDÆ.

Golden Swift	<i>Hepialus hectus</i>
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ZYGÆNIDÆ.

The Five-spot Burnet	<i>Zygæna trifolii</i>
The Six-spot Burnet	— <i>filipendula</i>

CHELONIIDÆ.

The Brown-tail	<i>Porthesia chrysorrhæa</i>
Cream-spotted Tiger	<i>Chelonia villica</i>
Garden Tiger	— <i>caja</i>

BOMBYCIDÆ.

The Grass Egger	<i>Lasiocampa trifolii</i>
Oak Egger	<i>Bombyx quercus</i>
Ground Lackey	— <i>castrensis</i>

ENDROMIDÆ.

Kentish Glory	<i>Endromis versicolor</i>
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SATURNIIDÆ.

The Emperor	<i>Saturnia carпинi</i>
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PSEUDO-BOMBYCES.

Buff-tip	<i>Pygæra bucephala</i>
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NOTODONTIDÆ.

Rusty Prominent *Notodonta dromedarius*

BOMBYCOIDÆ.

The Dagger *Acronycta psi.*

NOCTUIDÆ.

Marbled Beauty	<i>Bryophila glandifera</i>
Common Duak	<i>Agrotis segetum</i>
Silver Y	<i>Plusia gamma</i>
The Rustic Shoulder-knot	<i>Apamea basilinea</i>
The Clouded-bordered Brindle	<i>Axylia putris</i>
Broom Moth	<i>Hadena pisi</i>
Beautiful Brocade	<i>Hadena contigua</i>
The Cabbage	<i>Mamestra brassicæ</i>
Great Yellow Underwing	<i>Tryphæna pronuba</i>
Lesser Yellow Underwing	<i>Triphea orbona</i>
The Spectacle	<i>Abrostola urticæ</i>

GEOMETRÆ.

Mottled Beauty	<i>Bormia repandata</i>
Brinstone	<i>Rumia cratægata</i>
Large Mocha	<i>Gnophos obscurata, var. serotinaria</i>
Pale-shouldered Thorn	<i>Ennomos tiliaria</i>
The August Thorn	— <i>angularia</i>
Weaved Umber	<i>Hemerophila abruptata</i>
The Gooseberry Moth	<i>Abraxis grossulariata</i>
Purple Bar	<i>Melanippe ocellata</i>
Rufous Carpet	<i>Coremia munitata</i>
Garden Carpet	<i>Cidaria fluctuata</i>
The Spinach	<i>Cidaria dotata (spinachiata, Haw.)</i>

PYRALIDES.

The Flame	<i>Endotricha flammealis</i>
Chequered Straw	<i>Pionea stramentalis</i>
Resin Grey	<i>Eudorea resinæa</i>

CRAMBITES.

Inlaid Veneer *Crambus pascuellus*

TORTRICES.

The Sallow Long Cloak	<i>Antithesia capræana</i>
The Solandrian	<i>Pædisca solandrina</i>

TINEÆ.

White-fronted	<i>Elachista albifrontella</i>
Brindled Straw	<i>Depressaria propinquella</i>

PTEROPHORI.

Wormwood Plume	<i>Pterophorus spilodactylus</i>
Ochreous Plume	— <i>ochrodactylus</i>
Many Plume	<i>Alucita hexadactyla polydactyla</i>

NOTE.—The entry of family Psychidæ, genus *Fumea*, species *Robori-colella*, at p. 448, is cancelled, the genus being inserted in the wrong place. The correct entry will be found at p. 550.

ON SILVER REGAL MONEY COINED IN DEVONSHIRE MINTS.

BY H. S. GILL.

(Read at Paignton, August, 1878.)

AT previous meetings of our Association I contributed three papers, with descriptive lists of three hundred and thirty seventeenth-century tokens of this county, which, although allowed by the then ruling powers to pass, on sufferance, as current coin for above twenty years, were never authorized by them; but at a much earlier period of our national history, in fact, nearly one thousand years ago, there were at least three legalized mints at work for the coinage of silver regal money in Devonshire; and of the productions of these I now propose to give an account.

In the Anglo-Saxon era, when communication between distant parts of England was very difficult, and when the principal, if not the only money in circulation for several centuries was the old silver penny, the number required of those little coins must have been immense, and it then became necessary to establish mints, not only in the chief cities of England, but also at many smaller towns throughout the country, in order to supply the adjacent districts with the indispensable circulating medium so important for the supply of the daily wants of all classes.

Of the Devonshire royal mints, that of Exeter was by far the most important, as well as the first established and the last relinquished. For four hundred years, from Ælfred the Great, A.D. 872-901, to Edward I., A.D. 1272-1307, through above twenty reigns, in an almost uninterrupted succession, we have indisputable evidence from extant coins (of which a list will be given at the close of this paper) that silver pennies of the various kings between the above-named were struck in our western capital, but no coins of any larger amount. It is very probable that in the still earlier days of the Heptarchy silver pennies might have been coined in

Exeter; but it was not the custom before Ælfred's reign to put the name of the mint upon the coins. The names of the various kings throughout this paper are spelt as on their coins, except in the extracts from authorities quoted.

After an interval (from Edward I.) of about three and a-half centuries, during the protracted struggle between Charles I. and his Parliament, when that ill-fated king's necessities and immediate want of cash compelled him to coin money in various parts of his dominions, Exeter mint was again put into active operation. The coins then struck in the old city were of nine various denominations, from a "half-pound" to a penny, and are familiar to numismatists by their distinctive mint marks. (See list.) Once more, for the last time, in the reign of William III., when there was a great re-coinage of silver in 1696 and 1697, Exeter, with four other provincial cities, was selected by the government as a place of mintage, in addition to that at the Tower in London. The other country mints were at Bristol, Chester, Norwich, and York; and the money coined in them had respectively under the king's bust on the obverse their initials, B. C. E. N. Y. Two other early places for coinage in Devon were Lydford* and Totnes. It is very likely these towns were selected because they both had walls and gates, within which the precious contents of the mints would be better preserved against any sudden incursion of the rapacious and much-dreaded Danes.

Teignmouth too has been claimed as a Devonshire mint by the late Rev. Rogers Ruding, F.R.S., who in his *Annals of the Coinage of Britain*, vol. iv. p. 231, 2nd edition, states: "The name of this mint first occurs upon a penny of King Eadgar, which reads, 'DEORVLVES M-O TIN.' (That coin is engraved in his plate xxi., No. 21.) One of Edward the Confessor has 'TINC' upon it, which may possibly have been struck here; and a penny of William I. reads 'THIN,' which seems to have been intended for this place."

No other information about Teignmouth is given by Ruding; but the late John Lindsay, Esq., barrister-at-law,

* Lydford was evidently a place of importance in the Anglo-Saxon period. Tristram Risdon, who wrote his *Survey* about 1630, thus refers to the old town: "It is averred, and there want not proofs to maintain it, that it came little short of some cities; for they can show you where the gates stood, and also the foundation of the walls that encircled it, compacted of moorstone and lime, which they lighted on as they digged their fields. Furthermore, the number of burgesses do argue its former worth, which contained within the walls (as appeareth by their charter) an hundred and forty. In Edward the Confessor's days this borough was the king's demeane," &c. (*Survey of Devon*, pp. 220, 221.)

who is considered a good authority, in his *View of the Coinage of the Heptarchy*, p. 97, states it is "very doubtful" whether this mint ever existed. Therefore I must leave it still undecided. Ruding also claims Bideford as a royal mint in the reign of Henry III. (vol. iv. p. 222); but this is proved to be erroneous in Hawkins's *Silver Coins of England* (new edition, p. 194), where it is explained how the mistake occurred.

The first Anglo-Saxon coin known to have been struck in Exeter is a silver penny of Ælfred the Great, now in the British Museum. (See list.) Of his son and successor, Eadward the Elder, no Devonshire coins are known. He was succeeded by his son Æthelstan, A.D. 925-941. The worthy old Chamberlain of Exeter, Richard Izacke, in the first part of his *Memorials*, p. 18, states that "King Athelstan granted, and freely gave to this city, two mints for coynage in token of their integrity and the great trust he reposed in them, A.D. 930." There was a fashion in the legends on coins, as in most other things; and it was not the custom before the reign of Æthelstan, with very few exceptions (and Ælfred's penny above-named is one of them), to put the place of mintage upon the Anglo-Saxon money, but only the *name* of the moneyer, or (in Latin) *monetarius*, followed by this title of his office, variously abridged to MONETA., MONET., MON, or more frequently to M-O. One or more of these important officers was appointed by the king to the several mints. Moneyers, or mint-masters, are frequently mentioned in *Domesday Book*; and Ruding says (vol. i. p. 37): "After the Norman Conquest these officers appear to have been in some degree under the authority of the Court of Exchequer, as they were admitted to their respective stations in that Court, and took before the treasurer and barons their usual oaths of office." Their names in this early period are suggestive and interesting. There is scarcely a personage of any importance then living in the county whose name cannot be found as a moneyer about that time. In Risdon's *Survey* we learn, at page 354, that Goda was Earl of Devon in the reign of Æthelred II.; and in the same king's reign a Goda was one of the moneyers of Exeter, Lydford, and Totnes mints. In the *Saturday Review* of January 20th last there was a very able and interesting article on "Crediton," in which four prelates are named of that ancient see before it was transferred to Exeter, viz., Æthelgar, Sideman, Lyfing, or Lifing, and Leofric; and it is rather curious that all four names were those of moneyers about that time.

The two last-named officiated at Exeter in the Confessor's reign. I have a penny in my own collection struck by "Lifing on Execestr." Perhaps it was the custom in those days, as it is in ours, when we have so many Victorias, Albert Edwards, and Sydney Smiths, &c., &c., for parents to give their children at baptism the names of royal or eminent personages; so whether the said mint masters were of the same families as the first Earl of Devon and the four illustrious prelates above-named, it is impossible now to say, but the coincidence of names is striking. I said that before Æthelstan reigned the name of the mint was very rarely put upon the coins; but on some of his it is found, including one of Exeter, which will be found in the list No. 2. In the reign of his brother and successor, Eadmund, 941-946, Hawkins remarks (page 139, new edition), "the place of mintage is generally omitted." The same may be said of another brother, Eadred, who at the death of Eadmund reigned for nine years, 946-955; and of his successor, Edwy, or Eadwig (the son of Eadmund), 955-959. In these three short reigns a few mints only are to be found recorded on the reverses after the moneyer's name (and those, from want of space, are generally abbreviated); but fortunately one or more Exeter coins of all three kings have been preserved, and will be described hereafter. They are all of the highest degree of rarity, and cannot be obtained except at exorbitant prices.

Before the death of Eadwig, as his name is always spelt on his coins—sometimes with the Roman VV (double U), and less frequently with the Saxon p—his brother Eadgar had been elected king of all the country between the Thames and the Firth of Forth; but in 959 the latter became king of all England, being the first sole monarch under whom all the kingdoms of the Heptarchy were permanently united. It will be seen in the list that his uncle Æthelstan, who was fond of high-sounding titles, had on his Exeter penny "REX TO (tius) BRIT" (annæ), yet he never possessed the *whole* kingdom. Eadgar died in 975, and was succeeded by his son Eadweard II. (or "The Martyr") when only thirteen; but in 987 he was murdered at the gate of Corfe Castle by order of his step-mother, Elfrida. From the shortness of his reign the Exeter coins are very rare, and only two varieties are known. (See list.) His weak-minded half-brother, Æthelred II., rightly called "The Unready," then became king at the early age of ten. Ruding observes of him, "that his whole reign (thirty-eight years) was marked by a series of actions which betrayed

the most helpless irresolution and pusillanimity. Of the weakness of his government the Danes failed not to take advantage; and in the course of various invasions of his kingdom, extorted from him no less a sum than £167,000! The last payment of £30,000 took place A.D. 1014." A foot-note adds: "The amount paid to the Danes is taken from Florence of Worcester." (vol. i. p. 367.) No wonder that Æthelred's places of mintage, which far exceeded those of any previous king, were greatly increased to supply the extraordinary demand; and it was in his reign we first find Lydford and Totnes coins. It was the custom of the king, by bribing his insatiable enemies with these large payments, to induce them to desist from their depredations, and to leave the country; and in order to raise the necessary funds an annual tribute, called "Danegeld" (*i.e.* Danish payment), was levied by him in 991, first of one Saxon shilling, and afterwards of two shillings or more, on every hide of land.

This odious impost was continued for just sixty years, when it was remitted by Edward the Confessor in the ninth year of his reign. The Danes have the credit of being our greatest oppressors; but we learn from a quarto volume by Professor Hildebrand that much of the plunder from our island was carried also into Sweden and Norway. There is a large collection of Anglo-Saxon coins in the Royal Cabinet of Antiquities at Stockholm, and the aforesaid work was published in 1846 by the then curator, or "director," of the Museum. It contains a minute account of that wonderful collection, which had been found at different times and places, all buried in Sweden.

Unfortunately the book is written in the Swedish language, of which I am ignorant; but there is added, "*un éclaircissement en Français*," entitled, "Monnaies Anglo-Saxonnes du Cabinet Royale de Stockholm, toutes trouvées en Suède. Par B. E. Hildebrand, Directeur du Cabinet Royale des Médailles, &c., en Suède." From this portion of the work I have obtained much useful information.

The 4,200 coins in that collection, of which a detailed list is given by the author, are all silver pennies of seven consecutive reigns, from Eadgar to Edward the Confessor inclusive. There are very few duplicates, nearly all being struck from different dies. We find by the catalogue that 2,254 are Æthelred's, 1,396 of his successor "CNVT" (for so his name is spelt on his coins), and the remaining 550 are of the other five reigns. It is stated in a foot-note that, after the list was printed, 380 more Anglo-Saxon coins had been found in Sweden

and added to the collection, but the reigns are not named. Hildebrand further relates that there are 1,120 silver pennies of five reigns (viz., from Æthelred to the Confessor) in the Copenhagen Museum, including 580 of Cnut. It is therefore evident that *his* money formed great part of the spoils from England, and perhaps he took a pride in enriching his native land at our expense. But Norway, as well as Sweden and Denmark, helped to divide the plunder taken from us; for, we are further informed, there are 703 pennies of the same five kings at Christiana; and Hawkins relates that "two separate hoards were discovered of Æthelred's coins in Norway, A.D. 1848." (Page 149, new edition.)

Hildebrand adds, that there are smaller collections in the universities of Upsal and Lund, and in the libraries of four cathedral cities; viz., at Kalmar (or Calmar), Linköping, Wexio, and Wisby, all in Sweden. Of course only the coins of this county will be described here; but it will give us some idea of the activity of our Devon mints in Æthelred's reign when I state there are above 100 varieties of his Exeter pennies at Stockholm struck by forty moneyers, and about 40 coins of Lydford and Totnes by twelve different minters. On the accession of Cnut in 1016 the mints throughout England were still further increased, and his are perhaps more numerous than any other of our kings. See Hawkins (pp. 155, 156), who gives a list of about seventy ascertained mints and above twenty others, which, from the abbreviations of the Anglo-Saxon names of towns and blundered readings, cannot now be assigned to the places where they were struck. There are uncertain mints in most of the reigns before the Conquest, and some afterwards. Ruding and Lindsay give lists of about 350 of Cnut's moneyers. In his reign the practice of putting M-O before the mint was generally discontinued, and the preposition "ON" (meaning AT) was substituted instead. This arrangement continued on all the coins until the reign of Edward I., after which the name of the mint only was put, preceded by the word "Civitas" if a city, or "Villa" if a town.

By a careful examination of Cnut's pennies in the Stockholm collection, Hildebrand noticed that several of them had two names of the moneyer upon the reverse. Among several instances named by him is an Exeter penny by "Edsige Ware." (See No. 132 in the list of coins.) This was an important discovery, revealing the fact that surnames, which became hereditary, were then used in England. Ruding (vol. i. p. 365) had, in his list of King Eadgar's moneyers,

some fifty years before Cnut, given three instances where "*two moneyers*" (to use his own words) appeared on the same coin; but Hildebrand observes, "This is undoubtedly an error; and when two names are inscribed on one coin" (of which several instances are given at Winchester and elsewhere*) "the second name must be considered as a surname, by which the mint-master intended to distinguish himself from other persons of the same proper (Christian) name." That Hildebrand was right is confirmed by the fact that WARE is a well-known surname still existing in Exeter and in the county.

A like discovery would have gladdened the heart of Camden, the celebrated antiquary, who was Clarencieux King of Arms in the reign of James I.; and, therefore, in virtue of his office, ought to have been well informed on the subject; yet in his *Remaines Concerning Britain* he writes, in the chapter on surnames (page 110, 6th "impression"), thus: "As for myself, I have never hitherto found any hereditary surname *before* the Conquest; yet both I myself, and divers whom I know, have pored and pused (*sic*) upon many an old record and evidence to satisfie ourselves herein, and for my part I will acknowledge myself greatly indebted to them who will clear this doubt." Many persons sneer at the study of numismatics, and ask what use it is; but it is evident this old Exeter coin has revealed* to us the fact (unknown to Camden, "surnamed the Learned") that a Devon surname *was used before the Conquest*. It may here be noted that Cnut did not spell Exeter on his pennies in the same way as his predecessor. From the length of its Anglo-Saxon name, EAXEÆSTER, sometimes spelt Æxanceaster, it was abbreviated more or less in both reigns. On Æthelred's coins the four first letters were generally inscribed thus, EAXE; but on his successor's it was more usually EXLE, or ELXE. (See list.) Cnut died in 1035, and was succeeded by his son Harold, who survived that event only five years, when his younger brother Harthacnut became king. He was an intemperate

* The other double names in the Stockholm Cabinet in the reign of Cnut are Mathan Baluc and Godric Sp(w)ot, of Lincoln; Leofstan Swena, of London; Godp(w)ine Cas, Godpine P(w)idin, and Godpine Ceoca, of Winchester, who, on another coin, is named Godpine Coc. The surname of Ceoca, Ceoka, or Coc, is still common in Denmark; and this worthy, who probably came over to England with his royal master, may have been the ancestor of the numerous English families of Cook, Cock, or Cox. He is mentioned in the Winton *Domesday* book under a Latinized name; viz., "*Godwinus Cocche fuit tempore Edwardi Confessoris Magister Monetarius*" (Hildebrand, p. 101); by which we find that he continued in office till the Confessor's reign, when he was master (or chief) moneyer at Winchester.

man, and in two years died from the effects of a gluttonous draught. The coins of both brothers are very rare, consequently command very high prices. Exeter pennies of each reign have been preserved, but none from Totnes mint, and one only from Lydford of Harold I.

At Harthacnut's death, in 1042, the succession reverted to the old line, and Edward,* surnamed the Confessor, only surviving son of Æthelred II., became king. There are only five of his Exeter pennies in the Stockholm cabinet, and they are of two early types, struck before the remission of the Danegeld in 1051; but from the length of his reign (twenty-five years), and from the various hoards recently found in this country, his coins are rather common, and may be bought for a few shillings each. There was a large find of nearly 2,000 of his pennies in 1865, at Chaneton Farm, near Steyning, Sussex, and a very able paper was written on them by Mr. B. V. Head, of the British Museum, which was published in vol. vii., new series, of the *Numismatic Chronicle*. From this source I have gained the names of several Exeter moneyers, before unknown to numismatists.† It is well known that some of the *sole* Saxon names have come down to our own day as surnames, and among these we have "pulmer," one of the Confessor's mint-masters in Exeter. The Saxon *p* was then used for *W*, so that probably from him have descended the respectable family of Woolmer, still, I believe, existing in the old city. (I have a pulmer's penny in my own collection.) Another large hoard of Edward's coins was found in London in 1872. About 2,800 of them were acquired by Mr. Ernest H. Willett, of Brighton, who contributed an able and exhaustive paper on the subject to the *Numismatic Chronicle*, vol. xvi., new series. As a member of the Numismatic Society, I have had the advantage of reading this paper also, and found one more Exeter moneyer not in the lists of Ruding, Hildebrand, Lindsay, or Head. (No. 197 in list.) The moneyers' names on Saxon coins are like the seventeenth-century tokens in one respect; fresh discoveries of both are continually occurring that were never heard of before. The orthography on the coins in this reign was most defective. Hildebrand notices that Edward's name in the Stockholm collection was spelt in sixty-seven different ways, and many of the *same* mints and moneyers are spelt diversely.

In 1066, upon the death of Edward, Harold II. succeeded,

* I have spelt Edward's name without the diphthong, because it is frequently so spelt on his coins.

† Mr. Head's additions are in the B. M.

but was in power only nine months, when he was slain at the battle of Hastings. Notwithstanding the shortness of his reign, he had about forty mints and nearly one hundred varieties of moneyers' names, four moneyers officiating at Exeter. In the first half of the present century a native of Devon (born at Topsham, but who afterwards lived and died in Cork) published a work, entitled *An Olla Podrida, or Scraps, Numismatic, Antiquarian, and Literary*. By Richard Sainthill. Printed for private distribution only." I have fortunately been able to obtain a copy of this rare work (in 2 vols. 8vo.), in which I have gained much valuable information about the early Devonshire coins. I am also indebted to the kindness of Messrs. Head and Grueber, of the British Museum, for a description of several Anglo-Saxon coins struck at Exeter, now in our national collection.

Mr. Hawkins observes, at page 167 of his book (new edition), "There has always been great difficulty in assigning to the two Williams, the Conqueror and Rufus, their respective coins;" so that, although there are several types of their Exeter pennies existing (see list, Nos. 217-229), we hardly know to which of the two reigns they belong.* One of them was by SEMIER, now modernized into Seymour, the family name of the Duke of Somerset. Another was by the moneyer SEPORD, now Seward, a name still often found in and around Exeter. It is probable that "Mint Lane" acquired its name which it still retains, in the Anglo-Saxon period.

Some months ago a writer in the *Exeter Gazette*, under the head of "Wanderings and Wonderings, No. 10," referring to Mint Lane, remarks: "There must have been a time when coining was carried on in our ancient city, and what I wonder now is whether any of the coins struck in our Mint are still in existence; and is there anything known as to who was the master of this mint?" Now if the writer of that paragraph is a member of our Association he will in this paper get the information he asks for.

The coins of Henry I. (1100-1135) are very rare, as are also those of his successor Stephen (1135-1154); but a few of each reign, struck at Exeter, have come down to us. (See list.) The pennies of both kings are badly executed, and almost illegible; and the same may be said of the first coinage

* No date was ever put on any English money before that of Edward VI., nor were the reigns numbered on any coins until Henry VII. was king, with the sole exception of Henry the Third's on his second coinage; and if the Henries IV., V., VI., had adopted the same plan, it would have removed much doubt as to the assignment of their coins, a difficulty which, as in the two Norman Williams, is not yet surmounted.

of Henry II. (1154–1189), which can hardly ever be met with in good condition. There was a large hoard (5,700) of them found at Tealby, Lincolnshire, in 1807, and among the various moneyers four hailed from Exeter. The second type, generally called “short-cross” coins, from the cross on the reverse reaching only to the inner circle, was issued in 1180, and, strange to say, this type continued, through the reigns of Richard I. and John, with the same name, “HENRICUS REX,” upon the coins, until the 32nd of Henry III. (A.D. 1248), or a period of sixty-eight years.* It is well known that no genuine English coins exist with the name of Richard I. or John upon them, although we learn from Hawkins (new edition, pp. 190, 191) that the former established a mint at Lichfield, and that John issued a new coinage in 1205. Moreover, he ordered in 1208 that the moneyers of fifteen mints (named in Ruding, vol. iv. p. 220), including Exeter, “should seal up their dies, and appear with them at Westminster, to receive there the king’s commands.” The reason of their being thus summoned is not named.

The interesting fact that the “short-cross” coins, all bearing the name “HENRICUS REX,” were struck and issued by Richard I. and John was discovered by the researches of W. H. D. Longstaffe, Esq., F.S.A., and John Evans, Esq., F.R.S., &c., President of the Numismatic Society, who wrote two instructive papers on the subject in the *Numismatic Chronicle*, new series, for 1863 and 1865. In Mr. Evans’s paper the varieties of the said “short-cross” type are described and appropriated to the various kings by whom it is believed they were struck. One of the Exeter pennies assigned to John’s reign was coined by Gileberd (now Gilbert), another good old Devonshire name. (See No. 244 in list.)

Henry III. succeeded his father in 1216, when only nine years old, and, as before observed, issued the same short-cross pennies for thirty-two years, until 1248, when a new type appeared with a cross extending to the edge of the reverse, with three pellets in each quarter. Two varieties of this type were coined in Exeter. (See list.) I have a specimen of each. Edward I. was the last mediæval king who had pennies struck in Exeter, and these differed from all the previous coins since Æthelstan in not having the mint-master’s name upon them. They read “CIVITAS EXONIE” (nsis); and it is rather singular

* Richard I. (1189–1199) had two Anglo-Gallic pennies struck in Poitou and Aquitania with “RICARDVS REX” upon them; and John (1199–1216) had Irish money, bearing his own name, “IOHANNES,” coined at Dublin, Cork, and Waterford. I have specimens of these coins in my own collection.

that the Latin word for city had not appeared on any coin since the same king's (Æthelstan's) penny. Many other places of mintage besides Exeter were now discontinued, and each succeeding king rapidly decreased them. Henry III. coined his money in twenty-one different cities and towns; Edward I. in thirteen, besides his Irish mints; Edward II. in eight; Edward III. in five; and Richard II. in only three—viz., in London, York, and Durham. From his reign to that of Edward VI. one or more of the old mints were resuscitated; but, as before stated, that of Exeter remained dormant until Charles I. reigned. I cannot ascertain in what part of the old city the Stuart money was coined. The mint of William III. was in Mary Arches Street. (Brice's *Geographical Dictionary*, London, 1759, folio.)* Under the date of 1696, Izacke thus refers to it: "The privilege of a mint was granted, and erected within this city; several officers appointed, and silver money coined here." (*Memorials of Exeter*, p. 190.)

In conclusion, it may be remarked that our early English coins, as works of art, are all very poor, and will not compare with the noble specimens of Roman money that passed current in Exeter so many centuries before; nevertheless they are valuable as memorials of bygone days, and in handing down to us the names of persons (then of some local importance) which, without their evidence, would never have been revealed to us.

* Andrew Brice, born in Exeter, A.D. 1690, states at p. 545 in the above work (a copy of which is in the Royal Albert Museum) that he remembers when the said mint was in existence.

DEVONSHIRE COINS AND MONEYS.

[In the following list *O.* signifies obverse; *R.* reverse; *B. r.* began to reign; Saxon *D* means *TH*; *P* means *W*; *O. P.* means *Olla Podrida*; and *B. M.* British Museum.]

EXETER MINT.

(EXCELEASTER, OR ÆXANLESTER.)

ÆLFRED. *B. r.* A.D. 872.

1. *O.* + AEL | FRED. RE | XSAXO | NYM—In four lines across the field.
R. EXA. Read downwards, thus: $\cdot \cdot \frac{E}{X} \cdot$. Three pellets each side.

This coin is said to be unique. It was found at Cuerdale, and was bought by the authorities of the British Museum for £22 10s. It is engraved by Lindsay, plate 4, No. 97, and also in *Olla Podrida*.

EADWEARD the Elder. *B. r.* 901 — No Devon mint known.ÆTHELSTAN. *B. r.* 925.

2. *O.* + ÆDELSTAN REX TO (tius) BRIT (annise).
R. + RÆGENOLD M.O EAXANLE LIV (itas).
 A small cross in the centre of coin on each side.

This penny is engraved in *Olla Podrida*, plate 14, No. 2, and a specimen is in the collection of Jonathan Rashleigh, Esq., who kindly gave me the above description. He says: "I have a memorandum in my catalogue of the existence of two moneyers from Exeter; but I forget at this moment where the second moneyer exists." So I must leave him unrecorded.

EADMUND. *B. r.* 941.

3. *O.* Bust to right, reaching to the outer circle (as Hawkins, 192).
R. + CLALMONE MON EX — Small cross in field.
 A variety reads on.

4. *R.* + CLALMONE MONEIITX — Small cross in field.
 These are engraved in *O. P.*, plate 14, Nos. 3, 4.

EADRED. *B. r.* 946.

5. *O.* + EADRED . REX — Bust to the right, extending to edge of coin.
R. + VINE MONET AX — Small cross in field.
 The name of this moneyer still lingers in Devon.

6. *R.* + CLALMONE MONE MON EX — Small cross in field.
 7. *R.* STÆRVVRD MON EX — Small cross in field.

Formerly in the collection of Mr. Sainthill, and engraved in *O. P.*, plate 26, No. 1.

EADWIG. *B. r.* 955.

8. *O.* + EADVIG REX — Small cross in field.

R. + ÆLSIGE MON EX — Cluster of seven dots in field.

This coin, formerly in the collection of J. D. Cuff, Esq., is engraved in *O. P.*, vol. ii., plate 26, No. 2, and is the only Exeter penny known.

EADGAR. *B. r.* 959.

9. *O.* + EADGAR REX TO — Cluster of seven dots in field.

R. + EOROD MONET AX — Small cross in field.

10. *R.* + DYRMOD MON EX — Cluster of seven dots.

These two coins are engraved in *O. P.*, plate 14, Nos. 6, 7.

11. *R.* + FREODERIC MON X — Cluster of seven dots.

12. *O.* + EADGAR REX ANGLORV — Bust to the left, draped and crowned.

R. + IVHAN M O EAXNE — Small cross in field.

This coin is in the B. M., and the description of it was kindly sent to me by Mr. H. A. Grueber.

EADWEARD II. (Martyr). *B. r.* 975.

13. *O.* + EADPEARD REX ANGLOR — Bust to left (as Hawkins, 202).

R. + IOHAN M-O EAXE — Small cross in field.

This coin is in the Stockholm Cabinet. A variety is in the Hunter Museum at Glasgow, and reads

- 14 *R.* + IONAN M-O EAXEL — Small cross.

It is very probable the three last specimens were by the same minter, an Anglo-Saxon JOHN of the period.

The + preceding each legend will not be repeated after this.

ÆTHELRED II. *B. r.* 978.

In the Stockholm Cabinet there are five different types of this king's coins, which Hildebrand distinguishes by the letters A, B, C, D, E. A has the king's bust to the left, and on R. small cross, as Hawkins, 205. B. Ob. bust to the right, with sceptre. R. A hand from heaven between A and Ω (Alpha and Omega), as Hawkins, 206. C Ob. bust to the left, with a sceptre. R. A cross voided within the inner circle, C R V X in the angles, as Hawkins, 204. D. Ob. bust to left, with hair expressed by lines (sometimes called the Irish type). R. An open cross extending to the edge of the coin, each limb having an end like the letter U, Hawkins, 207. E. Ob. bust to left, with a radiated crown. R. A cross voided, as last, over a square, with three pellets at the corners, as Hawkins, 203. The varieties mentioned in the list either vary in the spelling of the moneyer's name or of the mint, or in the type of the coin. All from 15 to 121 inclusive are in the Stockholm Cabinet, but many of them are also in the B. M.

O. ÆDELRAED . REX ANGL(orum) — Usual legend on Ob.

- 15, 16, 17 *R.* ÆLFMÆR . M-O EAXE, type E..3 var. of this moneyer.

18 ÆLFMOD M-O EAXE „ B

- 19, 20, 21 ÆLFNOÐ M-O EAXEL „ B..3 var. of this moneyer.

22-25 ÆLFRIE M-O EAXEL „ C..4 var. of this moneyer.

26-28 ÆLFSTAN M-O EXAN	type A..4 var. of this moneyer.
29 ÆDESTAN ON EAXEL	" A
30 ASCTYEL M-O EC	" C
31, 32 BRVN M-O EAXELESTE	" B..1 var. of this moneyer.

When the moneyer's name is short, as in this case, there are more letters added to the name of the mint.

33 BYRHFERÐ M-O EAXE,	type D
34-36 BYRHSIGE M-O EAXE	" B..3 var. of this moneyer.
37-45 BYRHSTAN ON EAXE	" A..9 var. of this moneyer.

This name, now spelt Burston, is still in Devon.

46 BYRHTRIL M-O EAXE,	type D
47-50 CARLA ON EAXEL	" A..4 var. of this moneyer.
51 CVDI M-O EAXEL	" C
52 CYTEL M-O EAXE	" C
53-55 DVNSTAN M-O EAXE	" D..3 var. of this moneyer. One in H. S. Gill's collection
56 EADMÆR ON EAXEL	" A
57-60 EATSTAN ON EAXISERE	" A..4 var. of this moneyer.
61-65 EDRIL M-O EXELA	" C..5 var. of this moneyer.
66 EDPINE M-O EAXEL	" C
67-69 GOD ON EAXELESTR	" E..3 var. of this moneyer.
70-74 GODA M-O EAXEL	" B..5 var. of this moneyer.
75 GODDA M-O EAXEL	" B
76-78 GODPINE M-O EAXE	" A..3 var. of this moneyer.
79 HVNEPINE M-O EAXE	" C
80, 81 ISEGOD ON EAXLESTI	" A..2 var. of this moneyer.
82, 83 ISENGOD ON EAXLES	" A..2 var. of this moneyer.
84-86 ISGOD ON EAXLETRI	" A..3 var. of this moneyer.
87 LEOFRIE M-O EAXE	" C
88 LEOFSVN M-O EAXE	" B
89 LEOFSVNV M-O EAXE	" B
90-97 LVDA M-O EAXELESE	" B..8 var. of this moneyer.
98, 99 LVDDA M-O EAXE	" B..2 var. of this moneyer.
100 MANGOD M-O EAXE	" D
101-4 MANNA M-O EAXE	" B..4 var. of this moneyer.
106 SÆPINE ON EAXLESTR	" A
106-9 TVNA M-O EAXE	" B..4 var. of this moneyer.
110-15 PVLFSIGE M-O EAXE	" D..6 var. of this moneyer.
116, 117 PVLFASTAN M-O EAXE	" E..2 var. of this moneyer.
118-20 PYNSIGE M-O EAXE	" D..3 var. of this moneyer.
121 IYNSIGE M-O EAXE	" D

The above extraordinary collection comprises all the known Exeter moneyers, except the following var. of No. 34:

122 BYRNZIGE ON EALEL, in Mr. Rashleigh's collection.

When the names are similar, but spelt differently, they may be the same moneyer.

CNUT. *B. r.* 1016.

There were four different types of this king struck at Exeter; viz., A. Ob. king's bust to left, with sceptre. R. Cross voided within inner circle, as Hawkins, 238, or Rud. 22-4. B. Ob. king's bust to left in quatrefoil, crowned. R. Cross voided within a quatrefoil, as Hawkins, 212, or Rud. 22-6. C. Ob. bust, helmeted to the left, with sceptre. R. Cross voided within inner circle, with loops in each angle, as Hawkins, 213. D. Ob. bust to the left, no sceptre. R. Cross composed of four ovals issuing from a centre circle, as Hawkins, 211, or Rud. 23-27. His coins read on Ob. CNVT REX AN; sometimes ANGLOR(um). The following moneyers are in the Stockholm Cabinet:

123, 4	ÆFILL ON ELXELE,	type A..2 var. of this moneyer.
125-27	LÆRLA ON ELXELL	„ D..3 var. of this moneyer.
128	EDMÆR ON EXLEST	„ C
129	EDSIEE ON ELXLE	„ C
130, 131	EDSILE ON EXLEST	„ C..2 var. of this moneyer.
132	EDSILE PARE ON EL	„ A
133	ETSIIE ON ELXLES	„ C
134, 135	GOD ON EAXLES	„ B..2 var. of this moneyer.
136	GODD ON EXLESTRE	„ C
137	SÆPINE ON EXLEST	„ C
138	SEVLA ON ELXE	„ A
139	PINE ON EAXLE	„ B
140-43	PVLSTAN ON ELXEL	„ C..4 var. of this moneyer.

It is probable that Nos. 129-131, and 133 are by the same moneyer.

The following nine coins are in the British Museum, and the descriptions were kindly given to me by Mr. H. A. Grueber:

144	ÆLFRIE ON AXA,	type B..King's bust in quatrefoil.
145	ÆLFPINE ON ELXE	„ A..Bust to left, with sceptre.
146	EALDABEARN ON EL	„ C..Bust, helmeted to left.
147	EALDEBERD ON ELX	„ C..Bust, helmeted to left.
148	EDPINE ON ELX	„ A..Bust to left, with sceptre.
149	HVNERINE O EX	„ B..Bust in quatrefoil.
150	LEOPINE ON ALX	„ A..Bust to left.
151	DELENPINE ON ELX	„ A..Bust to left.
152	DVRGOD O EAXE	„ B..Bust in quatrefoil.

The underwritten are from various sources, types unknown.

153	BOND ON ELXEST	Found in Norway.
154	EAFLA ON EAXE	Found in Norway.
155	ELFRIC ON AXAN	Found in Norway.
156	ISEGOD ON EAX	Duke of Devonshire.
157	MANNA ON EAXE	Found in Norway.
158	DELNPINE ON ELX	Duke of Devonshire.
159	PVLFSIE ON EXE	Late Mr. Sainthill.

HAROLD I. *B. r.* 1035.

The Exeter coins of this king are of two types; viz., A. Ob. bust to the left, no sceptre. R. A cross formed of four ovals issuing from a circular

centre, as Rud. 24, 2. B. Ob. bust, with helmeted head to the left, with sceptre. R. A cross voided, with a flower (*fleur de lis?*) in each angle, as Ruding, plate 24, No. 4, or Hawkins, 214.

160 ÆDMÆR ON ELXE,	type A..In Copenhagen Cabinet.
161 EDMÆR ONN(sic) ELX	„ B..In Stockholm Cabinet.
162 EDMER ON ELXE	„ B..In Stockholm Cabinet.
163 EDNER ON ELXC	„ B..In B. M.
164 EDSIGIE ON ELXEL	„ A..In Copenhagen Cabinet.
165 HERPA ON ELXELL	„ A..In B. M.
166 HANLEOF ON ELX	„ A..In Copenhagen Cabinet.
167 LEOCPINE ON EX	„ B..In B. M.

It is probable the four first specimens of this reign may have been by the same artist.

HARTHACNUT. B. r. 1040.

This king's Exeter coins are also of two types; viz., A. Ob. bust to right, no sceptre. R. As type A of Harold I. (Hawkins, 216). B. Bust to left, with sceptre. R. Cross voided within inner circle, on it a square, with pellet at each corner, as Rud. 24, 2, or Hawkins, 217.

168 ÆLFSTAN ON EXEL,	type A..In Copenhagen Cabinet.
169 COLDA ON AXS	„ A..In B. M.
170 COLDEVTA ON EAX	„ A..In B. M.
171 DODDA ONN ELXELL	„ B..In Stockholm Cabinet
172 DODE ONN EXELE	„ B..In Stockholm Cabinet
173 EDMER ON EXLESR	„ B..Late Captain Farmer.
174 HÆRRA ON EXC	„ A..In Stockholm Cabinet
175 PVLFNOD ON EXLE	Jonathan Rashleigh, Esq.

EDWARD the Confessor. B. r. 1042.

There were eight different types of this king's coins struck at Exeter. It would be difficult to define or to describe them all without drawings, so with a few exceptions, I shall only put the number of each type as it appears engraved in Hawkins's work, plate xvii.

176 ÆLFRIE ONN EX. EL	Hs. 222..In B. M.
176a A variety of 176 reads: ÆLFRIE ON EXELESTE	„ 222..H. S. Gill.
177 ÆLFPINE ON ELX	„ 226..Late Mr. Sainthill.
178 ÆSPINE ON EXELEST	„ 227..In B. M.
178 BLACAMAN ON EX	„ 229..Late Mr. Sainthill.

The last type is smaller than all the rest, being barely five-eighths of an inch in diameter, and weighing only 17 grains, whilst most of the others are three-quarters of an inch or more, and weigh from 20 to 24 grains.

179 LEPINE ON EXELEST	Hs. 227..In B. M.
180 EADPARD ON EX	„ 225..H. S. Gill.

This type (Hs. 225) is full-faced, also of small diameter ($\frac{1}{4}$ in.), and weighs 18 grains. It has a small cross in field of R.

191 EDMÆR ON EXLEST	Hs. 226..In Stockholm Cabinet.
192 EDPIN ON EXELEST	„ 219..In B. M.
193 EDPN ON EX. ELEST	„ 219..In B. M.

- 194 EDSIE ON EXCESTR Hs. 219..See *O. P.*, page 188.
 195 ELFME ON ELXE „ 226..See *O. P.*, page 188.
 196 ELFRIC ON EXCESTE „ 227..In B. M.
 197 HVNEPINE ON EXC „ 219..E. H. Willett.
 198 LEOFPINE ON EXEC „ 228..E. H. Willett.

This penny (Hs. 228) has the king seated on a throne, with sceptre and orb in his hands. It is called the sovereign type, and has on R. a short voided cross, with a martlet in each angle, being the Confessor's arms.

- 199 LEOPINE ON ELEX Hs. 226..In Stockholm Cabinet.
 200 LIFINE ON EXCESTR „ 227..H. S. Gill.

This type (Hs. 227) has head and bust to the right, bearded, mitre on head, holding a sceptre in right hand; size three-quarters of an inch in diameter, weight 22 grains.

There are two other types by the same moneyer, and as they also read differently, I give them both.

- 201 LIFINE ON EXLE Hs. 220..E. H. Willett.
 202 LIFING ON EXCEST „ 222..In B. M.

The 220 type has the bust to the *left*, radiated with sceptre, and the 222 type has the bust to the *right*, crowned, and sceptre.

- 203 LIFNIE ONN EXELES Hs. 228..In B. M.
 204 SÆPINE ON EXELES „ 227..In B. M.
 205 SIEPINE ON EXELE „ 222..In B. M.
 206 PICINE ON EXCEST „ 222..In B. M.
 207 PILING ON EXELES „ 228..In B. M.
 208 PVLFMOD ON EXELE „ 233..See *O. P.*, page 188.
 209 PVLHAR ON ELX „ 229..In Copenhagen Cabinet.
 210 PVLMAER ON EXCEEST „ 222..H. S. Gill.
 210 All the Exeter pennies of this type read on obverse + EADFARD
 RD REX! The RD being always repeated.
 211 PYLMAR ON ELX Hs. 229..In B. M.
 212 PVLFPINE ON EXELE „ 223..In B. M.
 213 PVLPIKE ON EXELE „ 222..In B. M.

HAROLD II. *B. r.* 1066.

There are two types of this king's coins struck in Exeter; viz, A. Ob. head and bust to the left, crowned, with sceptre, as Hawkins, 230. R. Instead of the usual cross, the word PAX is across the field. B. Ob. similar head, with a different shaped crown, and *no* sceptre (as Hawkins, 232).

- 214 BRIHTRIC ON EXC—PAX, type B..In B. M.
 215 LIFINE ON EXCESTR—PAX „ B..In B. M.
 216 LEODFINE ON EXEC—PAX „ A..In B. M.

WILLIAM I. *B. r.* 1066. WILLIAM II. *B. r.* 1087.

There were six types of these two kings known to have been coined in Exeter, and it being difficult to distinguish one reign from the other, I have adopted Mr. Hawkins's plan of putting them together. It was however generally believed by the late Mr. Lindsay, of Cork (a very competent judge), that Nos. 233-237 in Hawkins belong to the Conqueror, and the other types to Rufus. The obverse of No. 233 is so much like No. 230 of Harold II., there

is very little doubt *that* is the first William's. No. 238 has a full-faced bust, crowned, with a star on each side the face, as on the great seal of Rufus. Those who are curious in these matters will find the various Exeter types described and engraved in Hawkins's *Silver Coins of England*, under his Nos. specified in my list. I may however remark that what is usually called the PAXS type (of which I have a specimen) is much more common than any others. On the R. is a cross within the inner circle, and in each quarter a letter in an annulet, forming the word PAXS. The meaning of the letter S is not known; but Ruding suggests it is "perhaps *Pax subditis*, to commemorate the surrender of the place." There were above ten thousand of these coins found at Beaworth, Co. Hants, in 1830, which were nearly all of the "Paxs" type, or Nos. 241 and 242 in Hawkins.

The following Exeter moneyers are known. R. The diphthong *Æ* on them is often expressed by IE; for A or V we have II, sometimes inclining in the wrong direction.

- 217 R. *Æ*LFPINE ON *Æ*XE, type as Hawkins, 238.. In the B. M.
 218 A variety of this minter reads *Æ*MFLPINE (*O. P.*).
 219 R. BRIHTPINE ON *Æ*XE, type 238.. *O. P.*, vol. ii. page 168.
 220 R. LIFPINE ON EXELI „ 241.. *O. P.*, vol. i. page 192.
 221 R. LIVING ON EXELESII „ 233.. In B. M.
 222 R. SEMIER ON *Æ*XSII „ 239.. *O. P.*, vol. i. page 191.
 223 O. PILLEL MREX „ 241.. H. S. Gill.
 R. SEMIER ON *Æ*XE „ 241.. PAXS type.
 224 R. S*Æ*PINE ON XELSTE „ 288.. In the B. M.

Another coin by this moneyer, also in the B. M., is a very rare type, and reads thus:

- 225 O. PILLEM REX, type 243.. King, full-faced bust, crowned, with a drawn sword in his right hand.
 R. SEPINE ON *Æ*EXE type 243.. Same device as No. 233.
 226 R. SEPORD ON *Æ*EXELI „ 238.. See *O. P.*, vol. i. page 190.
 227 R. SPEOTINE ON *Æ*XE „ 237.. See *O. P.*, vol. i. page 189.
 228 R. SPOTTINE ON EXL „ 237.. Rud. Sup., part ii. plate 1.

It is most probable the last two are by the same artist.

- 229 R. PVLFPINE ON EXELI, type 237.. *O. P.*, vol. i. page 189.

This type has on O. the king with a sceptre on each side the face, supporting the crown, and is sometimes called the canopy type.

HENRY I. *B. r.* 1100.

There was a collection of coins of Henry I. and Stephen found in Hertfordshire in 1818. Among them were the following struck in Exeter, viz.:

- 230 O. hENRIEVS—(As Hawkins, 265). Bust, three-quarter face, crowned, with a sceptre resting on the right shoulder.
 R. BRHLDPI : ON : EXLE. Treasure of four sides, fleury at the corners, upon a cross fleury, pellet in each angle.

- 231 O. hENRIEVS—(As Hawkins, 262). Front face, with sceptre.
 R. BRAND : ON : EC-ST. Quatrefoil, enclosing cross of pellets, with a star in centre, *fleur de lis* in each angle.

These two pennies are in Mr. J. Rashleigh's collection.

STEPHEN. *B. r.* 1135.

There are three Exeter types known of this king, viz. :

232 R. — ON EXLE—(As Hawkins, 270). See *O. P.*, vol. i. page 193.

233 O. STIEFN—(As Hawkins, 268). Three-quarter face, with sceptre ; see *O. P.*, vol. ii. page 158.

R. — ON EXE. A cross voided reaching to inner circle, from which issue four *fleurs de lis*.

234 O. STIFENE RE—(As Hawkins, new edition, No. 629).

R. VRLE ON CEXIT. A cross reaching to outer circle ; within, a quatrefoil with four *fleurs de lis*.

This penny was found in Exeter, and is said to be unique. It is now in the B. M., and was bought at Captain Murchison's sale for £13 5s. I was lately in the coin room at the B. M., where I saw it, and the above description was kindly given to me. Contrary to the usual run of Stephen's coins, it is very perfect.

HENRY II. *B. r.* 1154.

Among the coins found at Tealby (see page 598) there were the following struck at Exeter : O. Bust, nearly full-faced, extending to outer circle, crowned, with sceptre in right hand. R. Cross potent, with a small cross in each angle, as Hawkins, 285.

235 R. EDW(ard) ON EXLES. In the late Mr. Combe's collection.

236 R. LVNCELIN ON EXLS. With two other varieties in the spelling of Exeter.

237 R. RICARD ON EXLES. With another variety in the spelling of Exeter.

238 R. ROGIER ON EXLES. See *O. P.*, page 193.

This type is believed to have existed until 1180, when a second coinage was issued, bearing on R. a cross of double bars, with a small cross botone in each quarter, all enclosed within the inner circle, as Hawkins, 286. Down to the end of Henry II.'s reign the following Exeter moneyers issued their coins from that mint ; but since the first coinage came out a change had taken place in the shape of some letters ; the square L and the Roman E had been superseded by the Lombardic C and E, which were used on our coins until the end of Henry VIII.'s reign. Nevertheless the change was gradual, as No. 241 and 242 have the square E.

239 R. ADRÉTIL ON EXEC. See *O. P.*, vol. i. page 194.

240 R. ASKETIL ON EXEC. In B. M.

241 R. ASRETIN ON EXECE. In B. M.

242 R. IORDAN ON EXER. *O. P.*, plate 17, No. 46.

This name is still found in Exeter and South Devon.

243 R. OSBER ON EXECES. *O. P.*, plate 17, No. 47.

Some of the above may have been coined in the reign of Richard I., who continued the same type as his father.

JOHN. *B. r.* 1199.

The following Exeter minters are now believed to have issued their pennies in this reign with HENRICVS REX, as on his father's and brother's. On these coins the king has a long narrow face, very different to his father's, which was rounded and plump.

244 R. GILBERD : ON : EC. H. S. Gill.

245 R. IOHAN . ON . ECCE. *O. P.*, plate 17, No. 45.

246 R. RICHARD. ON. ECC. H. S. Gill.

247 A variety with the mint spelt ECCÆ has the mint mark, a cross pommé, instead of the usual cross patée.

Some of the above may have been struck under Henry III. (who *B. r.* 1216) before his second coinage was brought out in 1248. Of this type (as *Rud. ii.* 16), two varieties were struck in Exon, viz.:

248 O. HENRICVS REX III. Full-faced head, crowned, no sceptre.

R. PHILIP. ON. ECCÆ. A long cross, with three pellets in each quarter.

249 R. ROBERT. ON. ECCÆ. Engraved in *O. P.*, plate 17, No. 51.

250 R. ROGER. ON. ECET. Described in *O. P.*, page 131.

251 R. WALTER. ON. ECCÆ. Engraved in *O. P.*, plate 17, No. 52.

252 O. HENRICVS REX TERCI. Head as 248 (H. S. Gill).

R. IUN. ON. ECCETRE. Device as 248.

The coins reading TERCI are rather rare, and expensive.

These are all the Exeter moneyers I know of. In the last reign of this period in which Exeter pennies were coined, viz., Edward I. *B. r.* 1272,* they read thus:

253 O. EDW. R. ANGL. DNS. hYB. Full-faced bust, crowned, meaning Edwardus Rex Angliæ Dominus Hiberniæ.

R. CIVITAS. EXONIE. Long cross, and three pellets (as No. 248).

I have a specimen of this coin in my collection.

CHARLES I. *B. r.* 1625.

The crowns and half-crowns of this reign have on Ob. (as is well known) the king seated on horseback, with a sword raised in his right hand. There are eight varieties of the Exeter crowns described by Hawkins (pp. 314, 315, new edition); they have for mint marks either "a rose of peculiar form," a castle, or the two letters "EX." One (No. 3) is dated 1644, and three of them (Nos. 5, 6, 7) are dated 1645. Nos. 1 and 2 have no date.

The Exeter half-crowns are still more numerous. Fourteen varieties are described in Hawkins (pp. 325, 326). They have all one of the same three marks on each side as the crown. No. 1 is dated 1642, although Folkes and Ruding suppose this piece was coined in York; Nos. 6, 7, 8 are dated 1644; Nos. 11-14 are dated 1645. I have one of that date, with M.M. rose on O., and EX on R. These coins are very rare. Seven varieties of Exeter shillings are also described (p. 342). They have all a rose for M.M. on each side. Nos. 2, 3, 4 are dated 1644; Nos. 5, 6 are dated 1645. It may here be remarked that the Tower mint coins of the above three denominations are not dated, nor have they the three distinctive M.M. before named. There are only two Exeter sixpences described in Hawkins; they are both dated 1644 on the R., and have M.M. rose. The Exeter groat has the same date and mint mark, but the date precedes the legend on the obverse. I have in my collection an Exeter crown, half-crown, shilling, and groat.

The Exeter threepence differs from all the rest in having a square top shield over a cross fleury, and upon the shield is the date 1644. There are two varieties of the half-groat; one with an oval shield on the R., the other has a rose instead, filling the field, both dated on R. 1644. The penny is the same as the last-named type, and also dated on R. 1644. Each coin from a shilling to a penny has its value in pence recorded behind the head of the king.

* Ruding states (vol. iv. page 229): "In the eighth year of Edward I. it was ordained that there should be two furnaces in Exeter; and in 1300 an order was given for the building of houses for the workmen, and for sending beyond seas for workmen."

WILLIAM III. *B. r.* 1688.

The coins minted at Exeter were half-crowns, dated 1696, 1697, also shillings and sixpences of same dates. I have a shilling of 1696, and a sixpence of 1697, exactly like the rest of William's money, except in having the letter E under the king's bust.

LYDFORD MINT (A.S. LYDANFORD).

Ruding thus writes of this place of mintage (vol. iv. p. 231): "Mr. Southgate, in a letter to Mr. Polwhele, says that the mint in this town continued but a short time, chiefly through the boisterous reign of Ethelred II. The coins are consequently rare." Indeed, had it not been for the specimens preserved in the Stockholm Cabinet, there would have been very few to describe. All the following coins of the "Unready" are there, except Nos. 10 and 16.

Two of the moneys, ÆDEKED and BRVNA, were not in the Exeter list, unless BRVNA and BRVN are the same. The coins on the O. read ÆDELRED REX ANGLOR. For description of the types, see *ante*, page 601.

1 R. ÆLFSTAN M-O LYDA, type D. . . An open cross to outer edge.

2, 3 R. ÆDERED M-O LYDANF „ B. . . One more variety of this.

4 R. ÆDERYD M-ON LYDA „ B. . . Hand between A and Ω.

Probably the same moneyer as the two preceding.

5, 6, 7 R. BRVNA ON LYDANFORD „ A. . . Name of mint spelt diversely.

8, 9 R. GODA ON LYDAFOR „ A. . . One more variety of this.

10 R. GODA M-O ON LYDE „ A. . . (H. S. Gill) Small + in field.

11 R. GODA M-O LYDA „ C. . . Cross, and CRVX in angles.

12 R. GODA M-O LYDA „ D. . . Irish type, and long cross.

13 R. GODPINE M-O LYDAN „ B. . . As Hawkins, 206, with sceptre.

14 Same legend, but no sceptre, as Ruding, plate 22, No. 12.

This penny (No. 14), in fine condition, belongs to Mr. W. Gill, Tavistock.

15 R. GODRIC ON LYDAF. As Ruding, plate 22, No. 6.

Of CNUT'S reign one coin only is in the Stockholm Cabinet, viz. :

16 O. CNVT. RELX AN. As Hawkins, 213.

R. SÆPINE ONN LYDAF. Cross within inner circle, &c.

Of HAROLD I. only one is known, in Stockholm.

17 O. HAROLD RELX. As Hawkins, 214. Bust to left, with sceptre.

R. ÆLFPINE ON LYDA. Long cross, *fleur de lis* in each angle.

Of HARTHACNUT none are known.

Ruding says: "LV and LY occur on coins of Edward the Confessor, and LV on some of Harold II.;" but unfortunately he does not give the names of the minters.

TOTNES MINT (A.S. TOTANES).

The following coins, struck at Totnes, are in the Royal Cabinet of Stockholm, except a few that are specified as being elsewhere.

The coins of ÆDELRED. REX. ANGLOR read thus on O :

1 R. ÆLFSTAN M-O TOTA, type C

2 R. Same legend, and moneyer „ D

3 R. BYRHFERÐ M-O TOTA „ E

- 4 R. BYRHTPINE M-O TOTA type C
 5 R. DODA M-O TOTAN „ C
 6-8 R. DODDA M-O TOTANÆS „ B.. 2 other varieties of this.
 9 R. GODA ON TOTANÆS „ A
 10 R. GODPINE M-O TOTA „ C
 11 R. HVNEMAN ON TOTAN „ A
 12 R. HVNEPINE M-O TOTA „ D
 13 R. MANNA M-O TOTAN „ B
 14-18 R. Same moneyer, with five varieties in spelling and types.
 19 R. PVLFMÆR M-O TOTA „ D

Cnut's coins generally read thus on O.: LNV T REX AN.

- 20 R. ÆFPINE ON TOTAN, type C
 21 R. ÆLFPINE ON TOTTA „ C

Probably these were coined by the same minter.

- 22 R. LEFPINE ON TOTTA, type B.. At Copenhagen.
 23 R. LEOFGÆR O TOT „ B.. At Stockholm
 24 R. LEOFGAR O TOTA „ B.. At Copenhagen.
 25 R. SÆPINE. ON. TOTA: „ C.. H. S. Gill.

For description of Cnut's types, see *ante*, page 603.

WILLIAM II. (or Rufus).

The following rare type of Hawkins, 246, is in the B. M., and the description was kindly sent to me by Mr. H. A. Greuber, of that establishment.

- 26 O. PILLELM REX. Full-faced bust of king, with sword upright.
 R. DVNIC ON TOTNESE. A cross potent within a quatrefoil.

The moneys of Nos. 4, 5, 6, 11, 19, 22, 24, and 26, are not in the Exeter list of the above three reigns; but the names of Nos. 1, 9, 10, and 25 are found at all the three Devon mints.

Summary of coins known to have been struck at

Exeter mint (including No. 176A)	.	.	.	254 varieties.
Ditto by Charles I.*	.	.	.	37 „
Ditto by William III.	.	.	.	6 „
				297
Lydford mint	.	.	.	17 „
Totnes mint	.	.	.	26 „
				Total
	.	.	.	340

Of which 259 were before the Conquest.

* Including a silver "half-pound," with M. M. rose on both sides; described in Hawkins, page 320 new edit. The ten shilling pieces were the same diameter as the crowns, but much thicker, and about double their weight. There were also silver pound pieces coined at Oxford and Shrewsbury, but none known of Exeter.

ON THE GROWTH OF APLYSIÆ IN TORBAY.

BY ARTHUR ROOPE HUNT, M.A., F.G.S.

(Read at Paignton, August, 1878.)

AT the meeting of the Devonshire Association held at Kingsbridge in the year 1877, I had the pleasure of reading a paper on some large *Aplysiæ* which had been taken in Torbay in the autumn of 1875; which, if of the common species, were remarkable for their size; whilst if of a different and rarer species, they were also remarkable for their abundance at that time. If they were the *Aplysia depilans* described by Mr. Gwyn Jeffreys, the sudden incursion of such a rare mollusc was very noteworthy; if they were but monster examples of *Aplysia punctata*, their size alone would demand our attention.

Since the last meeting of this Society, I have had the opportunity of observing to a certain extent the growth of *Aplysia* in Torbay, and of obtaining facts which bear on the question of the identity or otherwise of *A. depilans* and *A. punctata*, as known in the British seas.

In August, 1877, I took several *Aplysiæ* off Meadfoot, which were larger than any undoubted specimens of *A. punctata* I had previously seen. On dissection, the largest of them was found to possess an odontophore with fifteen teeth on each side of its central row, instead of the typical thirteen of Mr. Woodward. I was subsequently informed, that rather large *Aplysiæ* were numerous about the same time at the Corboun's Head; and I immediately perceived that it would be of importance to keep a sharp look-out during the following autumn, to ascertain if the molluscs developed into such giants as those taken in 1875.

Being absent from Torquay until the middle of October, the opportunity of tracing their growth consecutively was lost, but shortly after my return specimens began to come in. During the following autumn, and in January, 1878, some fifteen individuals were brought to me, varying in weight from 10½ to 40 ounces. Previous to the 14th of

January, as none exceeded in weight the heaviest taken in 1875, I did not examine their odontophores, but merely laid them aside and preserved the shells; but on the date named, a fisherman brought me five *Aplysiæ* in a bucket together, and as one of them was far the heaviest I had ever seen, and they were brought to me weeks later than any in 1875, I examined them carefully.

They were a noteworthy quintett, as I shall now proceed to show, describing them in the order in which they were examined.

I. Weight, 25 ounces; length of shell, from apex, $2\frac{3}{8}$ inches; from shoulder, $2\frac{1}{8}$ inches.

The shell of this specimen was distinctly double, the two component parts being cemented together in the centre by some abnormal growth of tissue, but for at least three quarters of the circumference easily separated for some distance inwards. This is the only instance of a double-shelled *Aplysia* that has occurred to me, though upwards of twenty very large ones have passed through my hands; but on the strength of it I must confirm the statements of Dr. S. P. Woodward and Mr. M'Coy, referred to in my paper on the *Aplysiæ* read last summer, and retract the somewhat hasty scepticism I expressed on that occasion as to the possibility of these molluscs having more than one shell. If a mollusc departs from the normal state of being the owner of one shell by bearing two, it would be rash to deny the possibility of further subdivision to any extent. My own observations extend to the double shell only. On examination of the odontophore it was found to contain about eighty teeth from base to tip, the formula for centre being $32 \cdot 1 \cdot 32$, and for base $36 \cdot 1 \cdot 36$.

II. Animal mottled brown and buff, with a pink tinge suffused throughout; weight, 28 ounces. Contained about 12 fluid ounces of water, and discharged a good deal of pink dye when killed. Shell, $2\frac{1}{4}$ inches from apex, and the same from shoulder. Shell much darker brown than usual. Odontophore, in length, eighty teeth; across centre, $32 \cdot 1 \cdot 32$; across base, $35 \cdot 1 \cdot 35$.

III. Colour, deep brown; no tinge of dye observable. Weight, 32 ounces. Shell, $2\frac{1}{2}$ inches from apex, $2\frac{1}{8}$ inches from shoulder. Shell very perfect, inner calcareous layer not broken away at all, but unquestionably not double, nor any sign of it. Odontophore, in length, eighty-eight teeth; across centre, $32 \cdot 1 \cdot 32$; across base, $37 \cdot 1 \cdot 37$.

IV. Contained more than a pint of water; no sign of dye. Weight, 40 ounces. Shell, from apex, $2\frac{1}{8}$ inches; from

shoulder, $2\frac{1}{4}$ inches. Odontophore, in length, 90 teeth; across centre, $33\cdot1\cdot33$; across base, $36\cdot1\cdot36$.

V. Colour, usual brown. Weight, $10\frac{3}{4}$ ounces. Shell, from apex, $2\frac{1}{8}$ inches; from shoulder, $2\frac{1}{8}$ inches. Odontophore, in length, 80 teeth; across centre, $33\cdot1\cdot31$; across base, $37\cdot1\cdot35$; unsymmetrical.

On an examination of the foregoing details, it will be seen that, whether judged by its shell, by its odontophore, or by its weight, No. IV. is an *Aplysia* of very unusual size, and the largest of the large specimens from Torbay. Both in shell and odontophore No. V. follows next in order; but this mollusc, strange to say, weighed less than one-fourth the weight of No. IV., and is the lightest of all the large *Aplysia* I have weighed. The test of weight is evidently valueless, owing partly perhaps to the power the animals have of absorbing water; but the development of shells and odontophore may fairly be depended on, as the process in each case must be gradual. Judged by shells and odontophore, Nos. IV. and V., taken as they were later in the season than any pair taken either in 1875 or 1877, are most developed of all, whilst their three companions, though not quite so advanced, are larger than any taken in the autumn of 1875 with the exception of two. It is of course impossible to speak with any certainty from the observation of a limited number of specimens, but so far as they go they seem to indicate a gradual growth during the winter months of November, December, and January. That the very large *Aplysia* found in Torbay in October and November are the same as the large ones found in August I am not in a position to assert, but that such is the case seems to me highly probable. As already stated, an *Aplysia* taken early in August had an odontophore with fifteen teeth on each side of the median line, and there is no reason to suppose the specimen taken was the largest about at that time. One taken on the 14th October, 1875, had an odontophore with twenty-six teeth on each side of the median line, but there may have been smaller ones that escaped capture. The question is, whether the August and October specimens can be connected? if so, *Aplysia punctata* grows to a hitherto unrecognized size in the British seas, and *Aplysia depilans* must waive its claim to be a British mollusc; if otherwise, *Aplysia depilans* maintains its position in the fauna of these islands, but in this case we must admit one striking peculiarity in the two species; viz., that whilst *A. punctata* is a summer visitor to Torbay, *A. depilans* is more fashionable, and comes only in the winter.

Assuming for the sake of argument that all the Torbay *Aplysiæ* are of the common species, it may fairly be asked, Why is it that, seeing the mollusc is common all round the British coast, at Torquay alone it should attain to such an abnormal development? I think the difficulty may be explained as follows:

Aplysiæ when young frequent sea-weeds on rough bottoms in moderately deep water. The smallest I ever saw was taken off Anstis Cove in about seven or eight fathoms, and weighed less than one-sixth of a grain; another, a little larger, I took on the rocky ground near the Shag Rock in Torbay. Could the molluscs remain in deep water they would be safe, but, for some cause or other, probably for the sake of food, they work towards the shore, where they are at certain times found in the greatest abundance feeding on the sea-weeds. Here they will remain and thrive as long as the weather be favourable, but the first rough sea will wash them all ashore before they are half-grown, necessitating the whole process of development to be begun over again.

Any locality that would afford both food and protection from storms would obviously promote the chances of these molluscs attaining their full development, and perhaps no more favourable spot could be found than the inlet in Torbay, between London Bridge and the Corbon's Head. The most exposed part of this inlet, that nearest the Corbon's Head itself, is sheltered from all winds excepting those blowing from points between S. E. by E. and S. by E.; so that it is protected from seven-eighths of the winds that blow as far as their capacity for causing rough seas is concerned. But man has largely supplemented the protection afforded by nature by building a sea-wall between Torquay and the Corbon's Head, which by causing a rebound prevents objects being washed on shore, and again by the efficient protection of the new pier, which is a perfect defence against the waves on the Torquay side.

An extra supply of food has also been artificially provided for the specially-protected *Aplysiæ*, by turning the corner of the Bay off Tor Abbey into a sewage-farm for the growth of *Ulva*, a proceeding which, detrimental though it be to the town of Torquay, must be very beneficial to the sea-hares who luxuriate in its rank vegetation. It seems highly probable that the unprecedented development of *Aplysiæ* during the last few years in Torbay is entirely owing to the removal of the normal checks to the growth of the molluscs by artificial protection; and it is worthy of notice, that the only British habitat, other than Torbay, recorded by Mr.

Gwyn Jeffreys for his *A. depilans*, is, "Guernsey in a few fathoms outside the new harbour."

Aplysiæ breed when very small. I have some shells from Roundstone, Connemara, sent me by the Rev. A. M. Norman, which were taken from molluscs in the act of spawning. Some of them are but five-eighths of an inch in length, and their owners could have been little more than half an ounce in weight.

As the large *Aplysiæ* have not been taken in deep water, and would scarcely find a sufficient supply of food were they to return there, at any rate in the case of Torbay, it is probable that they do not make their way back to the greater depths from which they originally came, and that the race is kept up by the partially-grown individuals. In this case it is interesting to observe that descent from a long succession of immature, though not necessarily stunted progenitors, has not prevented development to the fullest extent on the removal of the natural checks to growth.

One marked feature in the small sea-hares is absent in the case of the large ones from Torbay; viz., the pink or purple fluid which the former discharge when irritated. In the large specimens taken in 1875 I saw no trace of this dye, and in those taken last winter, though the water was tinged with pink in two or three cases when the animals were cut up, there was no voluntary discharge during life. Perhaps the season of the year and the coldness of the water may check the secretion of the purple fluid; it can scarcely be owing to the size of the molluscs, as I have seen a rather large *Aplysia*, in a rock-post on the coast of Portugal, discharge the dye copiously.

Without wishing to attempt any critical description of the odontophores of *Aplysiæ*, a few facts concerning them may be of service to those who may not have the advantage of so extensive a series to study as I possess.

The odontophores of these molluscs undoubtedly develop gradually in the number of their teeth. My smallest specimen has but four teeth on either side of the median row across the centre, whereas my three largest have no less than thirty-four. The teeth also develop in size individually. The teeth (including their attachments to the lingual membrane) in the median row of the smallest, measure $\frac{1}{2}\frac{1}{10}$ th of an inch, whilst those of the specimen numbered 8 in the appended table measure $\frac{2}{3}\frac{1}{10}$ ths, and those of the specimen numbered 16 measure $\frac{3}{4}\frac{1}{10}$ ths respectively. In the small specimen the median teeth are larger than the adjoining laterals, whilst they in turn are larger than those next them,

and so on to the edge of the odontophore. In the large odontophores the teeth in the median row and those about it are about the same size. The teeth of *Aplysia* vary greatly in form and size in the same odontophore. The median in specimens of moderate size may be roughly compared to hands with five fingers, of which the two extremes are rudimentary, and the central much developed and beautifully serrated. This is well seen in the median teeth of the smallest *Aplysia* in my collection, and the form can be traced up to the specimen numbered 8 in the appended list. (Those numbered 9 and 10 are not in my possession.) Between this one, whose shell is but three-fourths of an inch long, and the smallest of the large ones, whose shell is $1\frac{3}{4}$ inch long, there is a great gap, and it is difficult at first to see any connection between the median teeth like five-fingered hands of the small ones, and those of the large ones where the five fingers are reduced to one small central one. In the largest odontophores the median teeth have lost all trace of cusps, and, continuing to compare them to a hand, we may say that the hand has been developed at the expense of the fingers, all of which have been absorbed. If we take a large odontophore, and follow one of the rows of teeth from the median outwards, we shall see the fingerless palm quickly develop into a well-fingered hand, and before reaching the edge of the odontophore we shall see that one or two of the fingers have developed at the expense of the hand until the last few teeth are more like daggers than anything else, and in form seem quite irreconcilable with those in the centre.

If a difference in form of median teeth indicated a difference of species, the large and small Torbay *Aplysia* would necessarily be specifically different; but considering the great variety in form of teeth in any one large odontophore, where between the median and laterals we find a divergence quite as great as that between the median teeth of the small Torbay *Aplysia* and those of the large ones from the same locality, and the general correspondence in type of odontophores of all sizes, I cannot but regard the evidence of the odontophores to be more strongly in favour of the existence of but one species of *Aplysia* in Torbay than of two.

As I have already shown, the odontophores grow downwards and sideways by the development of new additional teeth; and it might be supposed that the new teeth, *e.g.* those at the bottom of the median line, would be formed with the finely-cut serrations observed in those formed earlier, and that the newer teeth would have a different aspect from those which had been long in use; but this is not the case,

for the median line in every odontophore that I have examined is composed of a row of similar teeth, varying very little among themselves. From this it would appear that every new tooth acquires at once the form that the old ones have arrived at after months of growth and hard work.

There is reason to believe that the large *Aplysia* did not continue in Torbay for any length of time after January, 1878. In March, John Elmore, who brought me the five large ones already described, informed me that during the week in which he captured mine he caught a dozen more, which he brought on shore; but finding no market for them, he threw them all back into the sea, and these were the last large ones he had seen. On the 15th February, S. Stockman, a fisherman who is well acquainted with the general appearance of sea-hares, sent me a specimen, with the request that I would tell him what it was. Judging from the size of the head and shell, it must have been one of the large ones; but it seemed in the last stage of dissolution, and totally unlike an ordinary *Aplysia*. Mr. P. H. Gosse, to whom I showed it, suggested to me that it might have been swallowed and ejected by a fish, and been to a certain extent dissolved by the action of the gastric juice. The boy who brought it to me affirmed that it had crawled round the bucket when first caught, but had not "showed itself" any more, he and his father evidently expecting to see it expand like a sea-anemone, so unlike was it to any mollusc they had ever seen. This extraordinary specimen, taken as it was more than a month after the last previously taken, may perhaps be but an instance of the natural decay of the molluscs at the close of what must be to them an exceptionally long career.

In the appended list will be found particulars of eighteen odontophores of *Aplysia* from Torbay, showing their gradual growth. The measurements are taken across the centre, where the rows usually contain fewer teeth than those at the base. In the smallest the difference amounts to only one tooth on either side, and in the largest to three or four.

(1)	4 . 1 . 4	(10)	15 . 1 . 15
(2)	7 . 1 . 7	(11)	25 . 1 . 27*
(3)	8 . 1 . 8	(12)	26 . 1 . 26
(4)	9 . 1 . 9	(13)	27 . 1 . 27
(5)	10 . 1 . 10	(14)	29 . 1 . 29
(6)	11 . 1 . 11	(15)	30 . 1 . 30
(7)	12 . 1 . 12	(16)	31 . 1 . 33*
(8)	13 . 1 . 13	(17)	32 . 1 . 32
(9)	14 . 1 . 14	(18)	33 . 1 . 33

NOTES ON RECENT NOTICES OF THE GEOLOGY AND PALÆONTOLOGY OF DEVONSHIRE.

PART V.

BY W. PENGELLY, F.R.S., F.G.S., ETC.

(Read at Paignton, August, 1878.)

THE *Notices* on which I now propose to offer a few *Notes* have, with but one exception, like those commented on in 1876 (See *Trans. Devon. Assoc.*, vol. viii. pp. 148–244), exclusive reference to the Caverns of this county.

The exception takes us back to the remains of very much earlier times, and will, of course, take precedence.

I. MR. H. WOODWARD, F.R.S., F.G.S., ON THE DEVONIAN FISH OF DEVONSHIRE.

1. In a paper *On some Armoured Fishes*. By Henry Woodward, F.R.S., F.G.S., in *The Popular Science Review* for January, 1878, New Series, vol. ii., No. v., pp. 1–23, the following foot-note occurs on page 5:—"Mr. Pengelly states that he has upwards of 300 fragments of *Pteraspides* from the Devonian rocks of Mudstone Bay, South Devon, which have lain in his cabinet for years, having been formerly supposed to be sponges. . . ."

In this note, the author has attempted to give the substance of the following paragraph in a paper on *The History of the Discovery of Fossil Fish in the Devonian Rocks of Devon and Cornwall*. By W. Pengelly, F.R.S., F.G.S., etc., in the *Transaction of the Devonshire Association*, 1868, vol. ii., pp. 423–442:—"There are in my private collection upwards of three hundred specimens of the 'Polperro fossils,' each labelled with its locality. Many of them are the merest fragments,

but they all sufficiently resemble the identified specimen to warrant the belief that they are all *Pteraspides*; they are all fragments of fish, not of sponge." p. 440.

It will be seen that whilst Mr. Woodward makes me state that all my specimens are from Mudstone Bay, South Devon, there is nothing to that effect in my paragraph. As a matter of fact, no more than two, or at most three, of the specimens are from Mudstone Bay, and all the rest are from the south-east coast of Cornwall, between the river Fowey on the west and the Rame Head on the east.

II. MR. PENNINGTON ON KENT'S CAVERN.

The following paragraphs occur in *Notes on the Barrows and Bone Caves of Derbyshire. With an account of a Descent into Elden Hole.* By Rooke Pennington, B.A., LL.B., F.G.S. London: Macmillan and Co. 1877.

1. "Perhaps the most wonderful English discovery of a 'bone cave' is that made by the Rev. J. Magens Mello, in the Creswell Crags. No caverns in this country have furnished such a variety of evidence as to ancient man and the animals which furnished him with food and clothing." p. 91.

2. "Creswell also makes it pretty clear that man had to contend with the savage machairodus. The only other British cavern which has yielded traces of this strange animal is Kent's Hole. It has been doubted whether or not the scanty remains there found had not belonged to some other cave deposit than the one in which they were ultimately found. The natural conclusion is probably the right one: the machairodus was a contemporary of man." pp. 103-4.

3. "The Palæolithic cave-dweller of France and England was an inlander." p. 105.

It will be observed that direct mention of Kent's Hole occurs only in the second of these paragraphs. Nevertheless, as they all have a bearing on Kent's Cavern—and that not always a flattering one—I am induced to offer a few remarks on each.

1. Whilst fully admitting, as everyone must, the value and interest of the discovery made in the Creswell Crags, it does not appear that there is any reason for regarding it as "the

most wonderful English discovery of a bone cave ;” nor is it likely that the explorers of other English caverns will be ready to admit that “no caverns in this country have furnished such a variety of evidence as to ancient man and the animals which furnished him with food and clothing.” I shall not attempt, however, to deprive other explorers of the pleasure of protecting their own pets, but simply look after the just claims of Kent’s Hole ; and, as Mr. Pennington’s assertion occurs in the latter part of his volume, devoted exclusively to Palæolithic man, it is not necessary to direct attention to objects belonging to less ancient eras, in which Kent’s Cavern is rich.

Perhaps the readiest way of showing the products of the Devonshire and Derbyshire Caves will be to give tabular lists of both their Mammalian relics and their Human Industrial remains. In doing this the Creswell data will be those supplied by a paper *On the Mammal Fauna of the Caves of Creswell Crags*. By Professor W. Boyd Dawkins, Esq., M.A., F.R.S., F.G.S., F.S.A., Professor of Geology and Palæontology in the Owens College. Read April 11, 1877. (See *Quart. Journ. Geol. Soc. Lond.* Vol. 33, pp. 589–611.) In following this course I am drawing from the fountain head, as Prof. Dawkins was not only one of the Superintendents of the Exploration, but the Secretary of the Committee under whose auspices the work was carried on, as well as the palæontologist who identified the remains. (*Ibid*, p. 579.) It may be added, as a further recommendation, that in the first Table the Kent’s Cavern data (*Machairodus latidens* alone excepted) are those contained in a Report, also by Prof. Dawkins, assisted by Mr. Ayshford Sanford, presented to the British Association in 1869, and published by that body in their volume for that year. (See *Rep. Brit. Assoc.*, 1869, pp. 206–8.) It should be added, however, that, whilst all the remains found in Creswell Crags appear to have passed a full and final examination, not more than one-twentieth of the Kent’s Cavern specimens have been carefully inspected.

TABLE I. Showing the infra-human Mammals represented by the remains found in Kent's Cavern, Devonshire, and in the Caverns in Creswell Crags, Derbyshire—

	C	K
1. <i>Muchairodus latidens</i> . . .	x	x
2. Lion	x	x
3. Wild Cat	x	?
4. Leopard	x	...
5. Lynx	...	?
6. Polecat	x	...
7. Hyæna	x	x
8. Wolf	x	x
9. Fox	x	x
10. <i>Canis isatis</i>	...	?
11. Glutton	...	x
12. Badger	...	x
13. Cave Bear	...	x
14. Grizzly Bear	x	x
15. Brown Bear	x	x
16. Mammoth	x	x
17. <i>Rhinoceros tichorhinus</i> . . .	x	x
18. Horse	x	x
19. Wild Bull	...	x
20. Bison	x	x
21. Gigantic Irish Deer	x	x
22. Red Deer	...	x
23. Reindeer	x	x
24. Hare	x	x
25. Cave Pika	...	x
26. Water Vole	...	x
27. Field Vole	...	x
28. Bank Vole	...	x
29. Beaver	...	x
	17	27

TABLE II. Showing the Industrial Remains of Palæolithic Man found in Kent's Cavern, Devonshire, and in the Caverns in Creswell Crags, Derbyshire—

	C	K
1. Incised figure of Horse . . .	x	...
2. Incised bone	x	x
3. Bone awl	x	x
4. Bone needle	x	x
5. Bone harpoons	...	x
6. Notched lamina of bone . . .	x	...
7. Rod of antler	x	...
8. Bone pin	...	x
9. Perforated tooth	...	x
10. Pointed antler-tips	?	...
11. Rounded spear-head	x	...
12. Flint flakes, chips, cores, and tools	x	x
13. Chert flakes and tools . . .	...	x
14. Quartzite flakes, chips, and tools .	x	...
15. Ironstone tool and fragments . .	x	...
16. Hammer stone	...	x
17. "Whetstones"	...	x
18. "Dead" pecten shells . . .	...	x
19. Burnt bones	...	x
20. Burnt wood	x	x
	12	13

It must be needless to explain that the letters C. and K., heading the two columns on the right of the names in each Table, stand for *Creswell Crags* and *Kent's Hole* respectively; and that the presence or absence of asterisks denotes the presence or absence of the animal or article named on the same horizontal line.

The note of interrogation, used four times, indicates some uncertainty respecting the animal or article named. Thus:—

Lynx? (Tab. I): Professor Boyd Dawkins says, "A single canine from the Cave-earth indicates an animal of the size of *Lynx cervaria*." (*Rep. Brit. Assoc.*, 1869, p. 206.)

Wild Cat? (I): The same author says, "A lumbar vertebra

from the Cave-earth corresponds in size with that of the Wild Cat." (*Ibid.*, p. 207.)

Canis isatis? (I): Again, "With the larger bones there are a few much smaller than those of the Common Fox, that correspond most closely with those of *C. isatis*." (*Ibid.*, p. 207.)

Pointed antler-tips? (II): "The pointed antlers may have been used by man; but they may also be the result of the action of carbonic acid in wearing away the bruised surfaces." (*Quart. Journ. Geol. Soc. Lond.*, vol. 23, p. 592, 1877.)

Table I. shows that the caves under notice have, so far as is at present known, yielded a total of 29 species of Mammals; that 17 of them have been found in Creswell Crags and 27 in Kent's Hole; that 15 are common to the two localities; that 2 only—the Polecat and Leopard—were found in Derbyshire but not in Devon; whilst 12—Lynx, *Canis isatis*, Glutton, Badger, Cave Bear, Wild Bull (*Bos primigenius*), Red Deer, Cave Pika, Water Vole, Field Vole, Bank Vole, and Beaver—were met with in Kent's Hole but not in Creswell Crags. With these facts before us, it seems impossible to acquiesce in Mr. Pennington's assertion that "no caverns in this country have furnished such a variety of evidence as to the . . . animals which furnished [palæolithic man] with food and clothing," as those at Creswell Crags.

Nor does an analysis of Table II. take us much, if at all, farther in that direction. Of the 20 groups of articles made or selected by the Palæolithic men of Kent's Hole and Creswell Crags, it appears that 12 have been detected in the home of the latter, and 13 in that of Devon; that 4 are common to both localities; that Kent's Hole has produced bone "harpoons"—of two distinct types; a Badger's tooth perforated at the fang—to be strung probably as an ornament; a hammer stone which had seen much service; several so-called whetstones; numerous "dead" shells of pecten, sometimes—and in considerable numbers—packed neatly one within another and put carefully away in a cupboard-like recess in the limestone wall; and bones, as well as wood, which had been charred; but that no such articles have been found in the Palæolithic caves of Derbyshire now under notice.

On the other hand, it is equally certain that the old cave-dwellers in Creswell Crags engraved figures of animals on pieces of bone; that they fashioned laminæ of bone into tools by cutting deep notches in their edges; that they probably formed antlers into carefully rounded rods to be used perhaps as spear-heads; and that no such specimens have been detected in Kent's Hole.

In short, whilst it must be admitted that there is undoubted evidence that the Derbyshire Palæolithic men practised what must be called the fine arts, and whilst it must also be acknowledged that no indication of anything of the kind has been found amongst the relics of their contemporaries in Devonshire, we see no other sign of the "greater variety of evidence" spoken of. It does not appear that the objects made or utilized by the northern man were more varied, or of a higher type or finish than those of the southern, and we cannot but decline to admit that "no caverns in this country have furnished such a variety of evidence as to ancient man" as have those of Creswell Crags.

The Palæolithic men of Kent's Cavern contemplated in the foregoing remarks, are those of the Cave-earth period, not their remote predecessors of the Breccia or pre-hyænine era, who left behind them massive rude tools made out of *nodules*—not *flakes*—of flint and chert, but no other relics whatever. Of such men there appear to be no indications in the caves of Creswell Crags, for the lowest deposits there have yielded, not only industrial remains of man, but remains of the hyæna also. In fine, so far as the evidence goes, Devonshire was occupied by *pre-hyænine* men, but Derbyshire was not.

2. With regard to *Machairodus latidens*, it can scarcely be possible for any one unacquainted with the facts to arrive at any other conclusions on reading the second quotation from Mr. Pennington's book than,

(A.) That the remains of this species found at Creswell Crags were more numerous than those met with in Kent's Hole.

(B.) That there was a general suspicion that those yielded by the Devonshire cave had been dislodged from a more ancient bed and redeposited in a less ancient one.

(C.) That had this dislodgement and redeposition been established facts they would have destroyed all proof of the contemporaneity of Man and Machairodus.

Let us devote a few minutes to each of these hypothetical conclusions.

(A.) *The number of remains of Machairodus latidens found in Kent's Hole and at Creswell Crags*:—I have elsewhere directed attention to the facts that the Rev. J. Mac Enery found five canine teeth of the species in question in January, 1826 (*Trans. Devon. Assoc.*, vol. iii. pp. 486–9), in that part

of Kent's Cavern known as the Wolf's Cave; that he subsequently found an incisor tooth of the same species in an unspecified part of the same Cavern (*Ibid.*, p. 489); and that on 29 July, 1872, the Committee exploring the Cavern under the auspices of the British Association, found another incisor (*Ibid.*, vol. v. p. 179. See also *Rep. Brit. Assoc.*, 1872, pp. 46, 47). These, up to the present, are the only relics of *Machairodus* Kent's Hole is known to have yielded; and Mr. Pennington is justified in speaking of them as "the scanty remains there found," if his intention be to compare their number with that of many other species found in the same Cavern, but not if, as most persons would probably suppose, he is speaking of them in comparison with the remains of the same species found in Derbyshire; for at Creswell Crags no more than a solitary canine tooth, or, to speak correctly, crown of a canine, has been met with. Indeed, the seven teeth in Kent's Hole, Devonshire, and the one tooth in Robin Hood Cave, Derbyshire, are the only relics of *Machairodus latidens* yet disinterred anywhere in a British Cave.

(B.) *The suspected dislodgement and redeposition of the Kent's Cavern relics of Machairodus*:—Mr. Pennington is quite correct, literally, in stating that "it has been doubted whether or not the scanty remains [of *Machairodus* found in Kent's Hole] had not belonged to some older cave deposit than the one in which they were ultimately found;" but, lest any one should be led to suppose that this doubt had been general, I may add that no one ever held this doubt but Professor Boyd Dawkins; and that it was held by him, not on account of any fact attending their discovery, but on account of the zoological affinities of the species. I have elsewhere stated why this doubt appeared to be unreasonable. (*Trans. Devon. Assoc.*, vol. v., pp. 173–8. See also *Quart. Journ. Sci.*, vol. iii., N.S. pp. 212–6.) So far as I can ascertain there was nothing attending the discovery of the Derbyshire specimen in the least degree more conclusive as to its era than there was in the case of the Torquay specimen. Be this as it may, Professor Dawkins seems to be now convinced that *Machairodus latidens* was, in Derbyshire, as Mac Enery said in 1826 it was in Devonshire, a contemporary of "Rhinoceros, Elephant, Horse, Ox, Elk, Deer, Hyæna, Bear, Wolf, Fox, &c."*

* On 17th August 1878, about a fortnight after this paper was read, Professor Boyd Dawkins made his "recantation" on this question, when addressing the Geological Section of the British Association in Dublin. W. P.

(C.) *The contemporaneity of Man and Machairodus*.—The Kent's Hole remains of Machairodus were all found in the deposit known as the *Cave-earth*. The Cavern, however, contains two distinct deposits of much higher antiquity, and Professor Boyd Dawkins suspected that the oldest of these—that termed the *Breccia*—was that in which the relics in question had been primarily embedded, and to the era of which they belonged. As already stated, it does not appear to me that this suspicion is a reasonable one; but waiving this, the Breccia, though it yielded to the explorers no trace of Machairodus, did furnish them with a considerable number of rude and massive flint and chert tools; so that, as Sir Charles Lyell remarked when speaking of *Machairodus latidens*, whilst discussing this very question, "Man was still equally its contemporary in that earlier period." (*Antiquity of Man*, 4th ed., p. 108, 1873.) It was not necessary, therefore, to wait until the discovery in Derbyshire was made to be enabled to say "the natural conclusion is probably the right one: the Machairodus was a contemporary of man."

3. When Mr. Pennington states that "the Palæolithic Cave-dweller of France and England was an inlander," he appears to have forgotten that Kent's Hole is at present in a small peninsula, and that on all sides of it, from due north, through east, to south-west, the sea is nowhere more than 1·25, and at one place not more than 25 mile from it; and that the near proximity of the Palæolithic sea also is betokened by the harpoons or fish-spears, as well as by the utilized "dead" pecten shells found in the Cavern.

III. THE "WATERING PLACES OF THE SOUTH OF ENGLAND" ON KENT'S CAVERN. 1877.

A WOMAN LOST IN KENT'S CAVERN:—In *The Watering Places of the South of England (With Part of the West)*. 1877. London: Eyre Bros., to which Mr. J. T. White, of Torquay, has been so good as to direct my attention, the following statement occurs in a description of Kent's Cavern:—"Once when caution was probably not so much exercised as now, a woman who had entered the cavern lost her way, and, never regaining it, died a death nearly as horrible as that from which the five miners of Pontypridd so recently but just escaped. The skeleton of the unfortunate creature was found some years ago." pp. 584-5.

Being unacquainted with the address of the Editor of *The Watering Places*, I wrote the publishers, Messrs. Eyre Brothers, on 4th December, 1877, directing their attention to the story, and stating that I should be much obliged if they, or the Editor of the work, would be so good as to tell me whence it was obtained. They replied by return of post, observing, "We will hand your letter to our editor, whose reply you may expect in course of a few days." I am sorry to have to add that up to this time (June 1878) no further reply, or information on the question, has reached me from the editor or any other person.*

For stories belonging to the same category, see *Trans. Devon. Assoc.*, vol. iii. p. 238, and x. p. 146.

IV. "COCKREM'S TOURIST'S GUIDE" ON BRIXHAM CAVERN.

A small volume entitled *Cockrem's Tourist's Guide to Torquay and its Neighbourhood*, without date unfortunately, contains the following paragraph (pp. 97-8):—"The celebrated Brixham Caves (1) are situated at some distance (2) from the town, on the side nearest (3) Torquay. Its contents, generally speaking, resemble those of Kent's Cavern, and the Orestone (4) Caves, near Plymouth. The arrangement of the different deposits has created great interest; and its fossil contents have been purchased (5) by the Geological Society of London, who have paid the expense (6) of their exhumation."

The numerals introduced into the paragraph, but which it is unnecessary to say are not in the original, mark the points requiring correction or comment.

(1) For "Caves" read "Cave." The only "celebrated Brixham Cave" is that on Windmill Hill, discovered in 1858, and explored in that and the following year.

(2) For "at some distance from" read "in." The cave is situated in the north-west angle of the hill, at the junction of the two principal streets of the town, and its chief entrance is 75 feet above the level of the streets, which it almost overhangs. The Cavern is actually and vertically under some of the Brixham cottages.

(3) For "nearest" read "most remote from." A straight line from the Cavern to Torquay passes across the broadest part of the town of Lower Brixham.

(4) For "Orestone" read "Oreston."

* No further reply has reached me since. W. P. 18th Oct. 1878.

(5) The "fossil contents have [*not*] been *purchased*" by any one, but have been presented to the British Museum.

(6) "The Geological Society of London have [*not*] paid the expense of their exhumation," nor contributed so much as one farthing towards it.

The work was undertaken at the instance of the Geological Society, by a Committee appointed by the Council of that body and consisting entirely of Fellows of the Society. The expense, it may be said, was mainly borne by the nation; for "the Council of the Geological Society, not having at their disposal funds for undertaking such a work, addressed a letter to the President and Council of the Royal Society" for a portion of the annual grant of £1000, which, under the name of the *Donation Fund*, is placed at the disposal of the Royal Society to be devoted to scientific research. From this Fund, two grants of £100 each were voted "on the understanding that any specimens obtained should be eventually deposited in the British Museum." Private subscriptions in aid of the work were received from the Baroness Burdett-Coutts, Sir J. K. Shuttleworth, and Mr. R. Arthington. (See *Phil. Trans.*, vol. clxiii, 1873, pp. 475-6; or *Trans. Devon. Assoc.*, vol. vi. p. 790.)

On the completion of the exploration all the specimens were sent to the Geological Society of London, by whom they were forwarded to the British Museum when the Cavern Committee had sent in their Report to the Royal Society.

V. MR. PENGELLY ON CAVERN EXPLORATION IN DEVONSHIRE.

In an *Address* which I had the pleasure of reading to the Geological Section of the British Association, at Plymouth, 16th August, 1877, the following passages occur:—

1. "Oreston is distinguished as the only known British Cavern which has yielded remains of *Rhinoceros leptorhinus*." (p. 9.)

2. "Kent's Hole is the only known British Cave which has yielded remains of Beaver." (p. 9.)

Each of the passages contains an error, which I am anxious to correct; especially as the *Address* was printed *in extenso* and verbatim in the *Geological Magazine* (Decade 2, vol. iv., pp. 419-31), in *Nature* (vol. xvi., pp. 318-23), and in *The Zoologist* (Series 3, vol. i., pp. 361-79).

The errors will not appear in the *Address* as printed in the volume of the British Association for 1877.

1. *Oreston*:—When claiming for Oreston the distinction of being the only known British Cave which had yielded remains of *Rhinoceros leptorhinus*, I had overlooked the fact that, in their *Third Report*, presented to the British Association in 1875, the Committee appointed by that body “for the purpose of assisting in the Exploration of the Settle Caves,” placed *Rh. leptorhinus* amongst the species whose remains were “peculiar to the Lower Bed” of Victoria Cave. They add that it had “not been found before [that year] in the Cave, but its presence is well established now by teeth and bones.” (pp. 171–2.)

2. *Kent's Hole*:—Nor is Kent's Hole “the only known British Cave which has yielded remains of Beaver,” for the Rev. W. S. Symonds stated in 1872, when writing of Mrs. Bannerman's Cave on the banks of the River Wye, that, “In the upper *débris* of this Cave was found a perfect lower jaw of a beaver, probably one of the last of those animals that frequented the banks of the Wye.” (*Records of the Rocks*, p. 353.)

The error in this instance, though as clearly established, is scarcely so grave as that in the former case. The Kent's Hole Beaver, like the leptorhine Rhinoceros of Oreston and of Settle, belonged to Pleistocene times; but there is no reason to suppose that the Beaver whose relics were found in the Wye cavern could lay claim to any such antiquity.

REMAINS OF WHALES FOUND ON THE COAST OF DEVONSHIRE.

PART II.

BY W. PENGELLY, F.R.S., F.G.S., ETC.

(Read at Paignton, August, 1878.)

At the Tiverton meeting of this Association, in June, 1865, I had the pleasure of reading a short paper on *Cetacean Remains washed ashore at Babbacombe, South Devon*. (See *Trans. Devon. Assoc.*, vol. i. part iv. pp. 86-9.) As these remains have been mentioned elsewhere—not, however, without a few errors—and as, since the date just mentioned, other Cetacean relics have been found on, or near, the coast of this county, it has appeared desirable to re-introduce the subject on this occasion, especially as most of the “finds” have been met with near the spot in which we are now assembled.

The remains mentioned in my former paper were two cervical vertebræ, the first found on Babbacombe beach, near Torquay, and the second on the almost adjacent Petitor beach.

On 10th January, 1865, the late Dr. J. E. Gray read to the Zoological Society of London, a paper on the Babbacombe, or first, specimen, entitled *Notice of a new Whalebone Whale from the coast of Devonshire, proposed to be called Eschrichtius robustus*, which was printed in the *Annals and Magazine of Natural History*, 3rd Series, vol. xv. (= No. 90, June, 1865), pp. 492-5, but which I had not seen when my former paper was written. The following abridgement contains the principal points of this communication:—

“Mr. Pengelly has kindly brought to me one of the middle cervical vertebræ of a Finner Whale, which was washed ashore at Babbacombe Bay . . . on the coast of Devonshire, on the 24th of November, 1861. It is so different in its form and proportions from the cervical vertebræ of any of the species of British Whales which I described in my paper on

those animals (printed in the 'Proceedings' of the [Zoological] Society for 1864), that I lose no time in bringing a description of it before the Society. . . .

"In this case, though as yet we only know a single bone, there cannot be any doubt—1, that the body of the vertebra differs in its form and thickness from the vertebræ of any Finner Whale yet described; 2, that the thickness of the lateral processes is exceedingly different from that of those parts in any other known species; 3, that the size, or rather width, of the canal of the spine, as compared with the size of the body of the vertebra, differs from the width found in any whale yet examined.

"On comparing the vertebra with the drawing of the cervical vertebræ of *Balænoptera robusta*, described by Professor Lilljeborg in his very excellent paper on the Scandinavian Whales I was induced to believe that the bone sent by Mr. Pengelly might belong to that species; but, for greater certainty I sent a tracing of the bone to Upsal, and the Professor has replied that he believes it belongs to the species he described. He has also sent me a drawing of one of the cervical vertebræ of his species, which certainly agrees with the one from Babbacombe in every particular, except in being a trifle larger in all its parts.

"The addition of this animal to our marine fauna, and the procuring of the remains of a second specimen of a species which only rested on the description of an imperfect skeleton found imbedded in the sand on the coast of Sweden, is important.

"The body of the cervical vertebra of *E. robustus* from Babbacombe is very thick, and of a nearly uniform thickness; front and hinder surfaces nearly flat; the sides are nearly straight, the lower one being the widest and most arched out. The upper and lower lateral processes are strong; the upper one subtrigonal, slightly bent down, and nearly on a level with the articulating surfaces of the body; the lower one rather compressed above, broader and somewhat flattened on the lower edge. The width of the body 7·5 [inches], the height 6 inches. The upper process 3·75, and the lower 4·5 inches long; but they are evidently broken and sea-worn at the end.

"This vertebra appears to be the fourth or fifth cervical, as the lateral processes are nearly on the same plane as the articulating surface; while in the anterior and posterior cervicals they are usually either bent forwards or backwards.

It differs from other cervical vertebræ in the squareness of its form, the straightness of the sides, the smallness of the size, and the very great and equal thickness of the body. It is evidently the bone of an adult animal, as the epiphyses are completely united to the body of the vertebra."

Dr. Gray's statements appear to have been used by Mr. W. S. M. D'Urban, F.L.S., when drawing up *A Sketch of the Natural History of South Devon*, which forms an Appendix to Mr. Besley's *Hand Book of South Devon*, for (p. xxvii.) he says: "The 5th cervical vertebra of a very rare, and probably extinct, Whale called *Eschrichtius robustus*, was cast ashore at Babbacombe, 24th November 1861." Mr. Parfitt, speaking of the same bone, in his *Fauna of Devon—Mammalia*, says: "The date when this vertebra was cast ashore is November 24th, 1861" (*Trans. Devon. Assoc.*, vol. ix. p. 330).

With regard to the date when the Babbacombe specimen was found, Mr. D'Urban and Mr. Parfitt have followed Dr. Gray; but why he says it was the 24th November, 1861, I am at a loss to understand. As stated in my former paper, I bought the specimen "a few years ago, but the exact date has escaped me."

It may be as well to observe, perhaps, that whilst Dr. Gray speaks of the specimen as the "fourth or fifth" cervical vertebra, Mr. D'Urban uses the definite number, "the 5th." He does not state, however, on what authority he does so.

In the paper of 1865 I mentioned that early in May that year my second specimen had been found on Petitor beach, about half a mile east of Babbacombe. It has undergone much rougher usage, and is considerably less perfect, than the former, which it closely resembles, however, with the possible exception of being very slightly smaller. There can be no doubt that it belonged to the same species, if not the same individual.

So far as I am aware no other specimen was met with until 1867; but in his *Sketch*, already mentioned, Mr. D'Urban says another was found at Babbacombe in June, 1865; and this is quoted by Mr. Parfitt. (See *Trans. Devon. Assoc.*, vol. ix. p. 330.) In reply to an enquiry, Mr. D'Urban wrote me, as below, on 12th January, 1878:—"The following extract from Dr. J. E. Gray's *Catalogue of Seals and Whales in the British Museum*, p. 373, will give you all the information I possess about 'the second cervical vertebra' you make enquiries about:—"Mr. Pengelly has kindly informed me that a second cervical vertebra of this whale [*Eschrichtius robustus*]

was picked up, washed ashore at Babbicombe Bay, early in June, 1865.' W. S. M. D'U." I find that I wrote Dr. Gray on 15th May, 1865, informing him of the second "find," and stating that the "new specimen was picked up *last week*," that is, not earlier than the 7th nor later than the 13th May. He acknowledged on 17th May, 1865, receipt of my letter. It may therefore be concluded that the May specimen was really that said to have been found in June.

On 28th December, 1867, I purchased a third cervical vertebra, which, the person who sold it stated, had been found that day, and, like the second, on Petitor beach. It is less perfect than the first, but has escaped with less ill usage than the second. Though it, no doubt, belongs to the same species, it is not the homologue of either of the others, as the articulating surfaces, instead of being very nearly flat, are one of them decidedly concave, and the other correspondingly convex. Moreover, its upper and lower sides are not so nearly equal, and all its dimensions are, perhaps, a little greater.

During the meeting of the British Association at Exeter, in 1869, I laid a brief communication respecting the three foregoing vertebræ before the Biological Section, when all the specimens were exhibited. (See *Rep. Brit. Assoc.* 1869. *Trans. of Sections*, p. 116.)

There seems no reason to suppose that any other remains of *E. robustus* have been found in Devonshire up to this time.

It may be well to add that certain remains of Whale found at Pentewan, near St. Austell, Cornwall, and mentioned by the late Mr. J. W. Colenso in 1829 (see *Trans. Royal Geol. Soc. Corn.*, vol. iv. p. 574), were lodged in the Museum of the Royal Geological Society of Cornwall, at Penzance, and, after the lapse of upwards of forty years, were identified by Professor W. H. Flower, F.R.S., in 1872, as the right ramus of the lower jaw, a lumbar vertebra, a humerus, a radius, and two metacarpals or phalanges of this species—*E. robustus*. (See *Ann. and Mag. of Nat. Hist.*, 4th S., vol. ix., or *Trans. Royal Geol. Soc. Cornwall*, vol. ix. part 1, pp. 114–121.)

In October, 1870, two bones of whale, one a dorsal vertebra, the other a humerus, were taken up in a trawl off Berry Head, and now form part of the collection of the *Torquay Natural History Society*.

The following are the dimensions of the vertebra, which

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is nearly flat at each end or articulating surface, one of which is very slightly larger than the other:—

Antero-posterior length of the body	. 11.75 inches.
Max. and min. diameters of larger end	13 × 11.5 „
Length of dorsal process or spine	. 18 „
Length of least injured lateral process	. 4.25 „

The humerus, which is also greatly worn, answers well to the following description of that bone of a whale given in the *Penny Cyclopædia*, vol. xviii. p. 282, col. 2:—“The humerus is stout and short. . . . Its tuberosity does not reach beyond the head in front; this last is hemispherical. . . . The lower head is divided into two slightly inclined planes.”

Its dimensions are—

Extreme length of body	. . . 19.1 inches.
Girth of proximal head	. . . 36 „
Do. distal do.	. . . 27.1 „
Do. body, where least	. . . 22 „
Length of longer plane on distal head	. 6.25 „
Do. shorter do.	. 4.25 „
Breadth of distal head (tolerably uniform).	4 „

Each of the planes of the lower head is slightly concave, and this feature is most marked on the smaller plane.

On 9th January, 1874, I purchased the entire vertebræ of the neck of a whale, of a fisherman named David Chalice, who furnished me with the following memorandum:—

“Taken up in a seine, 10th May, 1873, shot in about 20 feet of water, and drawn up on the beach in Elbury Cove, Torbay, in my presence and, in part, with my assistance.

(Signed) DAVID CHALICE.”

This relic belonged to a different species of whale, as all the vertebræ are ankylosed. Their exposed surfaces are very concave, and the dimensions betoken a much larger animal. This specimen has undergone considerable abrasion, but the neural arch is well preserved.

It may not be out of place to remark here that remains of whales belonging to the era of our Raised Beaches, appear to have been met with some years ago at Plymouth. Thus, a writer in the *Monthly Magazine* (vol. xxvi. p. 191) says, when describing relics taken out of a bed of sand on Plymouth Hoe, fifty feet above high-water mark, in 1808, “A joint of back bone was discovered of an amazing size, being in diameter

nine inches and a quarter by four and a half deep. There is no perpendicular hole for the spine." There can be little or no doubt that this was a remnant of a whale, and, unless the neural arch had been removed by friction, that it was a caudal vertebra. (See *Trans. Devon. Assoc.*, vol. ix. p. 428.)

The late Dr. Edward Moore, writing in 1841 on the Raised Beach on the Hoe, mentions, in one place "caudal vertebræ of the whale" amongst the remains which had been met with; and in another, "the vertebræ of a whale much rounded." *Ibid*, pp. 426, 7.)

LIST OF MEMBERS.

* Indicates Life Members.

† Indicates Honorary Members.

‡ Indicates Corresponding Members.

The Names of Members of the Council are printed in small capitals.
Notice of changes of Residence and of Decease of Members should be sent to the
General Secretary, Rev. W. Harpley, Clayhanger Rectory, Tiverton.

Year of
Election.

- 1872† Adams, John Couch, M.A., D.C.L., F.R.S., F.R.A.S., Director of
Observatory and Lowndean Professor of Astronomy and
Geometry in the University of Cambridge, The Obser-
vatory, Cambridge.
- 1875 Adams, George, Buckyett, Little Hempston, Totnes.
- 1875 Adams, James, M.D., Ashburton.
- 1877 Adams, James, jun., Kingsbridge.
- 1878 Alexander, James, M.D., Paignton.
- 1874 Alsop, R., Teignmouth Bank, Teignmouth.
- 1877 Amery, Jasper, Glens, Kingsbridge.
- 1869 AMERY, J. S., Druid, Ashburton.
- 1869 AMERY, P. F. S., Druid, Ashburton.
- 1875* ANDREW, T., F.G.S., Southernhay, Exeter.
- 1877 Andrews, R., Modbury.
- 1863 APPLETON, EDWARD, F.I.B.A., Cotswold, Torquay.
- 1878 Armstrong, James, 2, Gerston Terrace, Paignton.
- 1870 Arnold, G., Dolton.
- 1878 Arnold, T., West of England Bank, Paignton.
- 1877 Arthur, Edward, Slade House, Kingsbridge.
- 1868 ASH, F., Dartmouth.
- 1868 Ashley, J., Honiton.
- 1874 Ayerst, J. S. A., M.D., 2, Belgrave Terrace, Torquay.
- 1878 BAKER, Sir SAMUEL WHITE, M.A., F.R.S., F.R.G.S. (PRESIDENT),
Sandford Orleigh, Newton Abbot.
- 1877 Balkwill, S., Park, Kingsbridge.
- 1877 BALKWILL, B., Devon and Cornwall Bank, Kingsbridge.
- 1871 Bangham, Joseph, Torrington.
- 1862 Barnes, Rev. Preb., M.A., The Vicarage, Heavitree, Exeter.
- 1877 Bartlett, Rev. J. M., Manor House, Ludbrooke, Modbury,
Ivybridge.

- 1876 Bastard, B. J. P., Kitley, Yealmpton, South Devon.
 1862 BATE, C. SPENCE, F.R.S., &c., 8, Mulgrave Place, Plymouth.
 1872 Bate, James J. R., Bampton Street, Tiverton.
 1875 Bate, D. C., Bampton Street, Tiverton.
 1873 Batten, J. Hallet, F.R.G.S., M.R.A.S., 2, Manston Terrace, Exeter.
 1866 Bayly, John, Seven Trees, Plymouth.
 1871* Bayly, Robert, Torr Grove, Plymouth.
 1868 Bayley, W. R., M.A., Cotford House, Sidbury, Sidmouth.
 1876 Beal, Rev. S., B.A., Professor of Chinese, University College,
 London, Hexham, Northumberland.
 1876 Bearne, Lewis E., Collinwood, Newton Abbot.
 1876 Beatty, W., Buckfastleigh.
 1875 Bedford, Captain E. I., R.N., Fairlawn, Paignton.
 1877 Beer, Captain W. R., Quay House, Kingsbridge.
 1877 Beer, W., jun., Kingsbridge.
 1878 Benbow, V., Torbay Mount, Paignton.
 1875 Bennett, C., 5, Victoria Terrace, Mount Radford, Exeter.
 1877 Bennett, E. Gasking, Woodland Terrace, Plymouth.
 1877 Berry, J., 18, Belgrave Terrace, Torquay.
 1878 Berthon, Claude, Southcombe, Paignton.
 1876 Bickford, J., Bank, Ashburton.
 1868 BIDDER, GEORGE P., C.E., Ravensbury, Dartmouth.
 1877 Birdwood, Major-Gen., Woodcot, Salcombe, Kingsbridge.
 1876 BISHOP, E., 23, Soho Square, London. W.
 1877 Blackler, J., Kingsbridge.
 1878 Blackmore, Rev. R., M.A., Probus, Cornwall.
 1872 Borlase, W. C., F.S.A., Castle Horneck, Penzance.
 1876 Bovey, Edward, Baddaford, Staverton, Buckfastleigh.
 1874 Bowring, Lady, 7, Baring Crescent, Exeter.
 1873 Bowring, L. B., C.S.I., Lavrockbeare, Torquay.
 1878 Bradford, J., Devonian, Paignton.
 1876† Bray, Mrs., 40, Brompton Crescent, South Kensington.
 1869 Brendon, William, George Street, Plymouth.
 1872 Brent, F., 19, Clarendon Place, Plymouth.
 1873 Brewin, R., Bearsden, Ide, Exeter.
 1872 Bridges, W. T., D.O.L., Torwood, Torquay.
 1878 Bridgman, G., Soudon, Torquay.
 1870 Briggs, T. R. A., F.L.S., 4, Richmond Villas, Saltash Road,
 Plymouth.
 1872 Brodrick, W., Littlehill, Chudleigh.
 1873* Brown, Mrs., 1, Stratton Street, Piccadilly, London.
 1876 Brown, M. G., Stanmore House, Dawlish.
 1878 Brown, James, Goodrington House, Paignton.
 1878 Brown, H., Greystone, Teignmouth.
 1872 Buckingham, W., 12, Southernhay, Exeter.
 1874 Bulteel, C., F.R.C.S., Durnford Street, Stonehouse.
 1877 Bunker, R., Kingsbridge.
 1871 Burch, Arthur, 5, Baring Crescent, Exeter.

1873*Burdett-Coutts, Right Hon. Baroness, 1, Stratton Street,
Piccadilly, London.

1878 Campbell, Gordon, Ferndale, Paignton.

1862 Cann, William, 9, Southernhay, Exeter.

• 1874 Carew, W. H. Pole, Antony, Torpoint.

1866*Carpenter-Garnier, J., M.P., Mount Tavy, Tavistock.

1877 Carpenter, John S., Kingsbridge.

1878 Cary, R. S. S., J.P., Tor Abbey, Torquay.

1873*CAVE, Right Hon. S., M.P., 35, Wilton Place, London. S.W.

1866*CHAMPERNOWNE, A., M.A., F.G.S., Dartington House, Totnes.

1876 Champernowne, Rev. R., M.A., Dartington, Totnes.

1866 CHANTER, J. R., Fort Hill, Barnstaple.

1875 Chapple, N., Well Street, Torrington.

1877 Chaplin, R. P., Earham, Torquay.

1871 CHARLEWOOD, Admiral E. P., R.N., Porthill, Northam, Bideford.

1876*Chatto, W. P., The Daison, St. Mary Church, Torquay.

1873 Chick, S., Sidmouth.

1878 Chinnock, F., Paignton.

1869*Clark, R. A., Wentworth, Torquay.

1871 CLEMENTS, Rev. H. G. J., M.A., Vicarage, Sidmouth.

1872 Clifford, Col. Morgan, St. Ronan's, Torquay.

1873 Clifford, Right Hon. Lord, Ugbrooke, Chudleigh.

1875 Clinton, Right Hon. Lord, Heanton Satchville, Beaford.

1878 Codner, T., Gerston Hotel, Paignton.

1874 Coffin, J. R. Pine, Portledge, Bideford.

1870 Coffin, T., Grove Cottage, Clarence Road, Clapton, London.

1873 Coleridge, W. R., Salston, Ottery St. Mary.

1868*COLLIERIDGE, Right Hon. Lord, M.A., 1, Sussex Square, London.

1876 COLLIER, Right Hon. Sir R., M.A. (PRESIDENT ELECT), Bigod's
Hall, Dunmoor, Essex.

1866 COLLIER, W. F., Woodtown, Horrabridge.

1871 Cook, Rev. Precentor, M.A., The Close, Exeter.

1876 Cornish, F. S., Kingsbridge.

1877 Cornish, J., Stancombe, Kingsbridge.

1867 COTTON, R. W., Woodleigh, Newton Abbot.

1866 COTTON, W., F.S.A., Elms House, Alphington Road, Exeter.

1878 Couldrey, W. G., Winner Street, Paignton.

1870 Crabbe, William Richard, F.S.A., East Wonford, Heavitree,
Exeter.

1878 Cranford, R., *Directory Office*, Dartmouth.

1866 Creed, J., Whiddon, Newton Abbot.

1877 Crimp, W. A., Kingsbridge.

1877 Cubitt, W., J.P., Fallapit Mounts, Kingsbridge.

1878 Dallaway, H., Hawthornden, Torquay.

1875 David, Rev. W., Colleton Crescent, Exeter.

1875 DAVIDSON, J. B., Secktor House, Axminster.

- 1877 Davies, W., Kingsbridge.
 1878 Davson, F. A., M.D., Dartmouth.
 1878 Davy, A. J., Fleet Street, Torquay.
 1870 De Larue, P. F., M.R.C.S., 40, Ker Street, Devonport.
 1878 Deller, Edwin, Paignton.
 1878 Dendy, A. H., M.A., Paignton.
 1873 DEVON, Right Hon. the Earl of, Powderham Castle, Exeter.
 1862 Divett, John, M.A., Bovey Tracey.
 1867 Doe, G., Castle Street, Great Torrington.
 1869*Douglas, Rev. R., M.A., Manaton, Moretonhampstead.
 1873*Dowie, J. M., Wetstones, West Kirby, Birkenhead.
 1876 DOWNES, Rev. W., Kentisbeare, Collumpton.
 1876 Drake, T. E., Manor House, Widdecombe, Ashburton.
 1877 Drew, J., Kingsbridge.
 1878 Drummond, R., M.D., Belgrave, Sidmouth.
 1877 Dumbleton, Rev. E. N., M.A., Exeter.
 1871 Dymond, F. W., 3, Manston Terrace, Exeter.
 1872 DYMOND, R., F.S.A., Bampfylde House, Exeter.

 1877 Eady, Mrs., Coombe Royal, Kingsbridge.
 1876 EARLE, Venerable Archdeacon, West Alvington, Kingsbridge.
 1877 Eddy, H., Kingsbridge.
 1878 Edgeland, F., Teignmouth.
 1873 Ellacombe, Rev. H. T., F.S.A., M.A., Clyst St. George.
 1877 Elliot, J., Tresillian, Kingsbridge.
 1877 Elliot, R. L., Tresillian, Kingsbridge.
 1878 Ellis, W. W., Winner Street, Paignton.
 1878 Elworthy, F. T., Foxdown, Wellington, Somersetshire.
 1869*Evans, J., F.R.S., F.S.A., F.G.S., Nash Mills, Hemel Hempstead, Herts.
 1877 Evans, J. L., Moreton House, Tyndall's Park, Bristol.
 1871*EXETER, Right Rev. the Lord Bishop of, the Palace, Exeter.

 1872 Falkner, Rev. Thomas Felton, B.A., F.S.A., F.M.S., St. Thomas's College, Colombo. (Care of J. E. Price, Esq., F.S.A., 60, Albion Road, Stoke Newington.)
 1869 Farley, H. W., C.E., 3, Belmont Villas, Newton Abbot.
 1864 Finch, T., F.R.A.S., M.D., Westville, St. Mary Church, Torquay.
 1875 FIRTH, F. H., Cator Court, Ashburton.
 1873 Fisher, Edward, Blackmore Hall, Sidmouth.
 1875 Fisher, G., High Street, Torrington.
 1876 Fisher, Thomas, M.D., Bilberry Hill, Buckfastleigh.
 1876 Fleming, J., Bigadon, Buckfastleigh.
 1876 Foaden, J. H., Ashburton.
 1876 Follett, C. J., Polsloe House, Exeter.
 1867 Fortescue, Right Hon. Earl, Castle Hill, Southmolton.
 1867*Foster, Rev. J. P., M.A., Dartmouth.
 1878 Foster, Samuel, Abergeldie, Torquay.

- 1876 Fouracre, J. T., Chapel Street, Stonehouse, Plymouth.
 1875 Fowler, C., Villa Mentone, Torre, Torquay.
 1876*Fowler, Rev. W. W., Repton, Burton-on-Trent.
 1876 Fox, Charles, Kingsbridge.
 1877 Fox, George, Kingsbridge.
 • 1863 Fox, S. B., 7, Southernhay, Exeter.
 1874†Froude, J. A., M.A., 5, Onslow Gardens, London.
 1868 Froude, W., M.A., LL.D., F.R.S., M.I.C.E., Chelston Cross,
 Torquay.
 1876 Fulford, Rev. F. D., Exmouth.
 1872 Fursdon, Rev. E., Fursdon, Tiverton.

- 1875 Gadd, Henry, Branscombe House, Exeter.
 1872 Galton, J. C., 6, Dix's Field, Exeter.
 1862 GAMLEN, W. H., Brampford Speke, Exeter.
 1877 Gay, W. R., Hill Side, Kingsbridge.
 1876 Gaye, Henry S., M.D., 3, Courtenay Terrace, Newton Abbot.
 1872*Geare, J. G., Exeter.
 1871*Gervis, W. S., M.D., F.G.S., Ashburton.
 1872 Gidley, Bartholomew C., M.A., 2, Barnfield Crescent, Exeter.
 1865 GILL, H. S., Exe Villa, Tiverton.
 1876 Gillow, W., Stapleton, Torquay.
 1875 Glubb, P. B., Potacre Street, Torrington.
 1877*Glyde, E. E., F.M.S., Kirkham, Babbacombe, Torquay.
 1868*Goldsmid, Sir Julian, Bart., M.A., M.P., 105, Piccadilly,
 London, W.
 1876 Goodrick, G., 11, George Road, Edgbaston, Birmingham.
 1878 Goodridge, J. T., M.R.C.S., Paignton.
 1868 Grainger, Rev. G. Watts, M.A., Luppit Vicarage, Honiton.
 1878 Greenfield, James, Hollacombe, near Torquay.
 1878 Greenfield, J., jun., Hollacombe, near Torquay.
 1878 GREGORY, A. (HON. LOCAL TREASURER), Bank, Paignton.
 1878 Gregory, Rev. E. I., M.A., Halberton Vicarage, Tiverton.
 1877 Gretton, Rev. W. H., M.A., Albanley, Torquay.
 1875 Groser, A., 3, North Devon Place, Plymouth.
 1873 Grundy, T., Beetlands, Sidmouth.
 1878 Grundy, Rev. T. R., Elbury Lodge, Newton Abbot.
 1876 Guenett, Rev. J. F., Point-in-View, Lymptone, Exeter.
 1875 Guille, Rev. G. de Carteret, Rectory, Little Torrington.
 1874 Gulson, J. R., East Cliff, Teignmouth.
 1873*Guyer, J. B., F.C.S., 1, Lisburne Cottages, Torquay.

- 1870 Haddy, Rev. J. P., 8, Home Park, Stoke, Devonport.
 1873 Hall, J. Sparkes, 308, Regent Street, London.
 1878 Hall, Rev. Preb., M.A., Kingshurst, Paignton.
 1867*HALL, TOWNSHEND M., F.G.S., Pilton, Barnstaple.
 1873*Halliday, W. H., M.A., Glenthorn, Lynmouth, Barnstaple.

- 1862 HAMILTON, A. H. A., M.A., President of the Exeter Naturalists' Club, Fairfield Lodge, Exeter.
- 1878 Hamlyn, W. B., 4, Abbey Crescent, Torquay.
- 1873*Hanbury, S., Bishopstowe, Torquay.
- 1878 Hardie, Capt., Penquit, Torquay.
- 1870 Harding, Col., F.G.S., Upcot House, Pilton, Barnstaple.
- 1868 Harper, J., L.R.O.P., Bear Street, Barnstaple.
- 1874 Harpley, R. B., Greatham, West Hartlepool.
- 1862 HARPLEY, Rev. W., M.A., F.C.P.S. (HON. GENERAL SECRETARY), Clayhanger Rectory, Tiverton.
- 1877 Harris, Rev. S. G., M.A., Highweek, Newton Abbot.
- 1873*Harvey, J. T., Aberfeldie, Torquay.
- 1875 Hatt-Cook, Herbert, Hartford Hall, Cheshire.
- 1869 HAWKER, Rev. Treasurer, M.A., Berryarbor Rectory, Ilfracombe.
- 1878 Hawley, F., The Wigwam, Paignton.
- 1869 Hayne, C. Seale, Kingswear Castle, Dartmouth.
- 1872 Hayward, P., Castle Yard, Exeter.
- 1862 Hearder, G. E., Torwood Street, Torquay.
- 1877 Hearder, Miss, Roland House, Brent, Devon.
- 1865 Hearder, W., Rocombe, Torquay.
- 1868*Heberden, Rev. W., M.A., 14, Gloucester Place, Portman Square, London.
- 1875 Hedgeland, Rev. Preb., M.A., Penzance.
- 1871 HEINEKEN, N. S., Sidmouth.
- 1876 Hill, H. S., *Cornish Telegraph*, Penzance.
- 1872 Hill, J., J.P., Moretonhampstead, Exeter.
- 1862 HINE, J. E., F.I.B.A., 7, Mulgrave Place, Plymouth.
- 1877 Hingston, P. O., Kingsbridge.
- 1869 Hingston, R., Dartmouth.
- 1876 Hingston, Rev. A. N., M.A., Kingsbridge.
- 1877 Hirtzel, G., Highlands, Barnfield, Exeter.
- 1875 Hockin, Edward, Poughill, Stratton, Cornwall.
- 1873 Hodge, B. T., M.D., High Street, Sidmouth.
- 1867 HODGSON, W. B., Professor, LL.D., Bonaly Tower, Colinton, Scotland.
- 1877 Holdsworth, A. F., Widdecombe House, Kingsbridge.
- 1877 Holt, Major, Ogbeare Hall, Holsworthy, Devon.
- 1875 Holwill, Frederick, South Street, Torrington.
- 1872 Hooper, B., Bournbrook, Torquay.
- 1878 Hooper, J., Kingsbridge.
- 1877 Horne, Mrs., Adwell, Torquay.
- 1872 Horniman, W. H., Coombe Cliff House, Croydon, Surrey.
- 1871 Hounsell, H. S., M.D., The Larches, Torquay.
- 1871 How, John, Bideford.
- 1872 Hughes, Major-General, W. T., C.B., Egland, Honiton.
- 1868*HUNT, A. R., M.A., F.G.S., Southwood, Warberry Road Middle, Torquay.

- 1878 Hunt, J. Lyde, Barnshill, Paignton.
 1878 Hunton, T., B.A., Bronshill, Torquay.
 1877 HURRELL, A. W., B.A., The Knowle, Kingsbridge.
 1877 Hurrell, Henry, LL.B., 1, New Court, Middle Temple, London.
 1876 HURRELL, J. S., Buttville, Kingsbridge.
 1876 Hurrell, R., The Knowle, Kingsbridge.
 1873 Hutchins, Rev. H., M.A., The Clintons, Teignmouth.
 1868 HUTCHINSON, P. O., Sidmouth.

 1877 Ilbert, Rev. P. A., M.A., Thurlestone Rectory, Kingsbridge.
 1877 Ilbert, W. R., Bowringsleigh, Kingsbridge.
 1869 Inskip, Rev. R. M., M.A., R.N., C.B., 1, Houndiscombe Place, Plymouth.

 1877 Jackson, G., F.R.C.S., St. George's Terrace, Plymouth.
 1877 Jane, Rev. J., 12, Egerton Park, Exeter.
 1877 Jarvis, W. A.; Bolberry, Kingsbridge.
 1875 Jones, C. K., M.D., M.R.C.S., Castle House, Torrington.
 1862 Jones, Winslow, St. Loyes, Heavitree, Exeter.
 1871 JORDAN, W. R. H., Bitton Street, Teignmouth.

 1874 KARKEEK, P. Q., 1, Matlock Terrace, Torquay.
 1877 Kellock, T. C., Totnes.
 1872* Kennaway, Sir John H., Bart., M.A., M.P., Escot, Ottery St. Mary.
 1876 King, H. J., 21, George Street, Swansea.
 1874 KING, RICHARD J., M.A., The Limes, Crediton.
 1868 Kingdon, A. S., M.D., Combmartin, Ilfracomba.
 1878 Kitson, R., M.A., Hengrave, Torquay.
 1865* Kitson, W. H., Hemsworth, Barton Road, Torre, Torquay.

 1869*Laidley, Rev. W., M.A., West Lawn, Teignmouth.
 1871 LAKE, W. C., M.D., F.M.S., 2, West Cliff Terrace, Teignmouth.
 1878 Langworthy, W. Froude, Brooke House, Modbury.
 1873 Lavers, W., Upton Leigh, Torre, Torquay.
 1871 Lee, Godfrey Robert, Fore Street, Teignmouth.
 1872 LEE, J. E., F.G.S., F.S.A., President Torquay Natural History Society, Villa Syracuse, Torquay.
 1873 Lethaby, R., Market Place, Sidmouth.
 1878 Lewis, J., Winner Street, Paignton.
 1877 Lidstone, J., Kingsbridge.
 1872 Linford, W., Elstow, Old Tiverton Road, Exeter.
 1873 Lister, C., Brunstath House, Bournemouth, Hants.
 1872 Lloyd, Horace G., 9, Baring Place, Mount Radford, Exeter.
 1873 LOVEBAND, M. R., Torrington.
 1877 Loveband, M. T., Pilton Abbey, Barnstaple.
 1877 Luscombe, John, Coombe Royal, Kingsbridge, and Alvington, Torquay.

- 1877 Luskey, J., Vine Terrace, Kingsbridge.
 1869 Luttrell, G. F., Dunster Castle, Somerset.
 1863*Lyte, F. Maxwell, Berry Head House, Brixham.

 1874 Macartney, Rev. S. P., Vicarage, Chudleigh.
 1878 McCormack, W. J., Woodbine Cottage, Paignton.
 1865 MACKENZIE, F., F.R.C.S., Tiverton.
 1877 Mallock, R., Cockington Court, Torquay.
 1871 Marshall, W., 12, Cornwall Street, Plymouth.
 1873 Marsh-Dunn, R. M., Carlton Lodge, Teignmouth.
 1871*MARTIN, JOHN MAY, C.E., F.M.S., Lower Musgrave House,
 Exeter.
 1870 May, J., M.R.C.S., J.P., 1, Nelson Villas, Devonport.
 1867*Merrifield, J., LL.D., F.R.A.S., Gascoigne Place, Plymouth.
 1862 Miles, W., Dix's Field, Exeter.
 1870 Mogg, W., Stafford's Hill, Devonport.
 1873 Mogridge, Robert Palk, Withycombe House, Wiveliscombe,
 Somerset.
 1862 Moore, W. F., The Friary, Plymouth.
 1872 Mortimer, W., 14, Bedford Circus, Exeter.
 1874*Mount-Edgcumbe, Right Hon. Earl of, Mount-Edgcumbe,
 Devonport.

 1864 Nankivell, C. B., M.D., Layton House, Torquay.
 1876 Nosworthy, W., Ford, Manaton, Moretonhampstead.
 1872 Nuthall, Major-General, Bellair, Torquay.

 1862 ORMEROD, G. W., M.A., F.G.S., Woodway, Teignmouth.
 1876 Orpen, Rev. E. C., M.A., Mamhead Rectory, Exeter.

 1878 Paige, W., Conway House, Paignton.
 1872 Paige-Browne, J. B., M.A., Great Englebourne, Harberton,
 South Devon.
 1862 Palk, Sir Lawrence, Bart., M.P., Haldon House, Exeter.
 1878 Palk, F., Winner Street, Paignton.
 1869*Pannell, C., F.G.S., Walton Lodge, Torquay.
 1862 PARFITT, EDWARD, Devon and Exeter Institution, Exeter.
 1872 Parker, C. E., 13, Scarborough Terrace, Torquay.
 1872†Peach, Charles W., A.S.L., 30, Haddington Place, Leith Walk,
 Edinburgh.
 1877 Pearce, F. D., Brook House, Kingsbridge.
 1876 Pearse, W. E. G., M.D., 24, Bessborough Gardens, London. S.W.
 1874 Pearse, W. H., M.D., 1, Alfred Place, Plymouth.
 1872*Peek, Sir H. W., Bart., M.P., Rousdon, Lyme, Dorset.
 1878 Pengelly, A., Lamorna, Torquay.
 1862 PENGELLY, W., F.R.S., F.G.S., &c., Lamorna, Torquay.
 1878 Perrett, C., Southfield Road, Paignton.
 1872 Pershouse, F., jun., Tor-Mohun House, Newton Road, Torquay.

- 1864 PHILLIPS, J., Devon Square, Newton Abbot.
 1867 Pick, Joseph Peyton, Castle Street, Barnstaple.
 1875 Pidgeon, H. H., South Street, Torrington.
 1876 Pitt-Lewis, J., 1, Elm Court, Temple, London. E.C.
 1862 Pollard, W., M.R.C.S., Southland House, Torquay.
 1877 Port, J., Albion Hotel, Kingsbridge.
 1868 Porter, W., M.A., Hembury Fort, Honiton.
 1878 Powell, W., M.B., F.R.C.S., Hill Garden, Torquay.
 1876 Power, Rev. J., M.A., Dodbrooke, Kingsbridge.
 1876 Powning, Rev. J., B.D., Totnes.
 1875 Price, W. E., South Street, Torrington.
 1878 Pridham, C. W., F.R.C.S., L.R.C.P., 1, Bishop's Place, Paignton.
 1878 Pring, James H., Elmfield, Taunton.
 1874 Proctor, W., Elmhurst, Torquay.
 1867 Prowse, A. P., Mannamead, Plymouth.
 1878 Pulliblack, Rev. J., M.A., St. Mary's Lane, Walton-on-the-Hill, Liverpool.
 1862 PYCROFT, G., M.R.C.S., F.G.S., Kenton, Exeter.

 1872 Raby, S., Cranleigh, near Guildford, Surrey.
 1869*Radford, I. C.
 1868*Radford, W. T., M.B., F.R.A.S., Sidmount, Sidmouth.
 1876 Radford, Rev. W. F. A., Down St. Mary Rectory, Bow, North Devon.
 1872 Ramsay, H., M.D., Duncan House, Torquay.
 1873*Rathbone, T., M.A., Backwood, Neston, Cheshire.
 1877 Rayer, W. C., Holcombe Court, Wellington.
 1872 Reichel, Rev. Oswald J., B.C.L., Sparsholt, Wantage, Berks.
 1873 Remfry, G. F., Firsleigh, Torquay.
 1872 Reynolds, W., 26, Torwood Street, Torquay.
 1869 Ridgway, Lieut.-Colonel, Sheplegh Court, Blackawton, South Devon.
 1869 Ridgway, S. R., LL.D., M.A., 27, Dix's Field, Exeter.
 1862 Risk, Rev. J. E., M.A., St. Andrew's Chapelry, Plymouth.
 1877 Roberts, I., F.G.S., 26, Rock-Park, Rock-Ferry, Cheshire.
 1871 Robin, John, Bishopsteignton, Teignmouth.
 1867 Rock, W. F., Hyde Cliff, Wellington Grove, Blackheath.
 1878 Rodd, —, Grenham, Paignton.
 1870 ROLSTON, G. T., M.R.C.S., Stoke, Devonport.
 1878 Rooker, W. S., Bideford.
 1872 Rossall, J. H., M.A., Lonsdale, York Road, Exeter.
 1878 Rossiter, W., Fernham, Paignton.
 1878 Rossiter, W. H., Town Mills, Paignton.
 1865 Row, W. N., Cove, Tiverton.
 1862 ROWE, J. BROOKING, F.S.A., F.L.S., Lockyer Street, Plymouth.
 1866 Russell, Lord Arthur J. E., M.P., 10, South Audley Street, London.
 1869*Ryder, J. W. W., J.P., 5, Tamar Terrace, Stoke, Devonport.

- 1869 Sanford, W. A., F.G.S., Nynhead Court, Wellington, Somerset.
 1877*Saunders, J. Symes, M.B., Devon County Asylum, Exminster.
 1874 Schuster, Herbert L., Belton Lodge, Torquay.
 1876 Scott, T. A. Sommers, 17, New Street, Spring Gardens, London. S.W.
 1865 Scott, W. B., Chudleigh.
 1876 Sharman, Rev. W., 20, Headland Park, Plymouth.
 1878 Sheriff, G., Winner Street, Paignton.
 1868 Sidmouth, Right Hon. Viscount, Upottery Manor, Honiton.
 1876 Sinclair, J. B., Stratford Lodge, Torquay.
 1869*Sivewright, J., The Grove, Torquay.
 1878 Slade, S. H., Simla, Goodrington, Paignton.
 1874 Smith, E., F.C.S., Strand, Torquay.
 1873*Sole, Major W. H., Hareston, Torquay.
 1874*Somerset, His Grace the Duke of, Stover, Newton Bushel.
 1864 Spragge, F. H., The Quarry, Paignton.
 1874*Spragge, F. P., The Quarry, Paignton.
 1877 Square, J. Harris, Barnfield, Kingsbridge.
 1878 Square, W., F.R.C.S., Plymouth.
 1874 Standerwick, R., Chagford.
 1868 STEBBING, Rev. T. R. R., M.A., Warberry House, Bishopsdown Park, Tunbridge Wells, Kent.
 1876 Steele, H., Place, Ashburton.
 1876 Stevens, H., Hazeldene, Ashburton.
 1876 Stentiford, C. D., *Western Morning News* Office, Plymouth.
 1872*Stewart-Savile, Rev. F. A., M.A., Ardmore, Torquay.
 1877 Stileing, T. W., Aveton Gifford, Kingsbridge.
 1878 Stokes, Adrian, M.D., Balsters, Sidmouth.
 1876 Stone, J., Leusdon Lodge, Ashburton.
 1877 Stooke, T. S., Hilly House, Kingskerswell.
 1875 Strangways, Rev. H. Fox, Silverton Rectory, Collumpton.
 1869 Studdy, H., Waddeton Court, Brixham.
 1878 Style, Sidney, 223, High Street, Exeter.
 1875*Sullivan, Miss, Broom House, Fulham.
 1878 Syngé, Captain, R.N., Ardfield, Paignton.

 1876 Tanner, E. Fearnley, Highgrove, Ashburton.
 1877 Taylor, H., M.D., Ellerton, Torre, Torquay.
 1876*Templar, J. G. J., M.A., Lindridge, Teignmouth.
 1877 Thomas, Henry Drew, Dix's Field, Exeter.
 1872 Thomas, J. L., New Hayes, St. Thomas, Exeter.
 1877 Thomas, W. J., Mill Street, Kingsbridge.
 1872 Thomson, Spencer, M.D., Ashton, Torquay.
 1868 Thornton, Rev. J. H., B.A., North Bovey Rectory, Moreton-hampstead.
 1877 Timewell, S. W., Bell House, Dodbrooke, Kingsbridge.
 1878 Tippet, G. E., Durnford Street, Stonehouse.
 1878 Tomlinson, Rev. J. P., Rooklands, Torquay.

- 1869 Tothill, W., Stoke Bishop, Bristol.
 1872 Tozer, Henry, Ashburton.
 1876 Tozer, J., Ashburton.
 1873 Tozer, J. H., Glendaragh, Teignmouth.
 1876 Tozer, Solomon, East Street, Ashburton.
 1876 Trehane, J., Wanbro', Torquay.
 1871 Trevelyan, Sir Walter C., Bart., M.A., F.G.S., Wallington,
 Newcastle-on-Tyne.
 1878 Trevithick, F. H., Parkhill, Paignton.
 1872 Tucker, C., F.S.A., Marlands, Exeter.
 1876 Tucker, Edwin, Ashburton.
 1876 Tucker, Lewis, Natsworthy Manor, Widdecombe, Ashburton.
 1876 Tucker, R. C., Ashburton.
 1878 TUCKER, W. EDWARD (HON. LOCAL SECRETARY), Paignton.
 1872 Turnbull, Lieut.-Col. J. R., The Priory, Torquay.
 1877 Turner, Miss, Coombe Royal, Kingsbridge.

 1876 Ubsdell, H., Buckfastleigh.
 1875 USSHER, W. A. E., F.G.S., 28, Jermyn Street, London. S.W.

 1870 Vallack, C., 5, St. Michael's Terrace, Stoke, Devonport.
 1872 VARWELL, P., Alphington Street, St. Thomas, Exeter.
 1862*VICARY, W., F.G.S., The Priory, Colleton Crescent, Exeter.
 1862 VIVIAN, E., M.A. (GENERAL TREASURER), Woodfield, Torquay.

 1878 Wallis, A. J., Totnes.
 1878 Warner, Rev. G. T., M.A., The College, Newton Abbot.
 1878 Watkins, Rev. W., Bridgetown, Totnes.
 1878 Waycott, A., Winner Street, Paignton.
 1877 Webb, W. H., M.R.C.S., Albion Hotel, Kingsbridge.
 1864 Weeks, C., 83, Union Street, Torquay.
 1877 Wells, Rev. T. B., M.A., Portlemouth, Kingsbridge.
 1877 Were, H. B., Bradninch.
 1870*Were, T. K., M.A., Cotlands, Sidmouth.
 1866*Weymouth, R. F., D. LIT., M.A., Mill Hill, Middlesex. N.W.
 1877 Weymouth, T. W., Woolston House, Kingsbridge.
 1878 Whidborne, G. F., M.A., F.G.S., Charante, Torquay.
 1872†Whitaker, W., B.A., F.G.S., Geological Survey Office, 28,
 Jermyn Street, London. S.W.
 1876 White, G. T., Glenthorne, St. Mary Church, Torquay.
 1864 White, J. T., Cleveland Road, Torquay.
 1867 White, Richard, Instow, Barnstaple.
 1878 Whiteford, Hamilton, Tothill, Plymouth.
 1875 White-Thomson, Col., Broomford Manor, Exbourne, North
 Devon.
 1871 Whiteway, J. H., Brookfield, Teignmouth.
 1870 WHITLEY, N., Penarth, Truro.
 1872 Wilkinson, R. C., Bradninch House, Exeter.

- 1878 Wilks, G. F. A., M.D., Ruther Glen, Torquay.
 1877 Williams, F., Watermouth Castle, Ilfracombe.
 1876 Williams, Rev. J., M.A., Widdecombe, Ashburton.
 1876 Willan, L., M.D., The Library, Penzance.
 1877*Wilcocks, G. W., A.I.C.E., 34, Great George Street, Westminster [Teignmouth].
 1872 Wilcocks, H., Spurbarne, St. Leonard's, Exeter.
 1877 Wilcocks, Rev. E. J., M.A., Orford, Warrington, Lancashire.
 1877*Wilcocks, R. H., LL.B., 34, Great George Street, Westminster [Teignmouth].
 1876*Wilcocks, W. K., M.A., 52, Scarsdale Villas, Kensington, London. W. [Teignmouth].
 1871 Willett, J. S., Monkleigh, Torrington.
 1871 Wills, Joseph, West Quarter, Exeter.
 1875 Wiltshire, Rev. T., M.A., F.G.S., F.L.S., F.R.A.S., Hon. Sec. Geol. and Palæont. Societies, 25, Granville Park, Lewisham, London. S.W.
 1875 WINDEATT, EDWARD, Totnes.
 1866 Windeatt, John, Woodland House, Plymouth.
 1872 Windeatt, T. W., Totnes.
 1872*Winwood, Rev. H. H., M.A., F.G.S., 11, Cavendish Crescent, Bath.
 1878 Wolfe, Rev. Preb., M.A., Arthington, Torquay.
 1872 WORTH, R. N., F.G.S., 3, Patna Place, Plymouth.
 1876 WORTHY, Charles, Ashburton.
 1870 Wren, A. B., Lenwood, Bideford.
 1876 Wright, W. H. K., 7, Headlands Park, Plymouth.

The following Table shows the progress and present state of the Association with respect to the number of Members.

	Honorary.	Corresponding.	Life.	Annual.	Total.
July 27th, 1877....	3	2	47	452	504
Since elected	..	..	10	77	87
Since deceased	..	..	2	11	13
Since withdrawn ..	..	..	..	102	102
Since erased	..	..	..	5	5
August 2nd, 1878 ..	3	2	55	411	471

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LIST OF CORRECTIONS REQUIRED IN "TRANSACTIONS OF
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Page	4, line 1,	for "Regis" read "Rogns"
"	11	" 15 for "Carey" read "Cary"
"	25, under "RECEIPTS,"	for "£194 0s. 6d." read "£194 0s. 0d."
"	34, line 20,	for "toute" read "route"
"	34	" 21 for "rimes" read "times"
"	52	" 3 for "Hill" read "Hall"
"	104	" 28 insert "away" after "keep"
"	123	" 11 for "Widdecombe" read "Widcombe"
"	151	" 43 for "pin" read "pins"
"	170	" 24 insert "of" after "variety"
"	172	" 40 insert "first" before "tenanted"
"	190	" 40 for "Mactia" read "Mactra"
"	206	" 15 for "Ho" read "House"
"	229	" 21 for "I'm" read "I am"
"	229	" 29 for "toats-and-butter" read "toasts and butter"
"	274	" 38 for "T." read "P."
"	289	" 23 and 24
"	296	" 5
"	303	" 43
"	310	" 3 for "Elias" read "Elize"
"	343	" 23 for "to" read "of"
"	343	" 28 for "Mills" read "Milles"
"	385	" 32 after "R." cancel "a."; and for "Barnstaple" read "Barnstable"
"	389	" 11 for "Carril" read "Caril"
"	420	" 27, and elsewhere throughout this paper, for "Mathews" read "Mathew"
"	421	" 6
"	421	" 34
"	442	" 40
"	435	" 32 for "a sort of border-land between Devon and" read "in south-east"
"	495	" 20 insert "Cornwall" after "Head"
"	563	" 4 for "capured" read "captured"
"	592	" 39 for "987" read "978"
"	639	" 30 for "Dunmoor" read "Dunmow"
"	642	" 18 for "Castle" read "Cathedral"

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